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The
Massachusetts
Supreme Court

As to just how serious will be the effect of the narrow, essentially legal refinement with which the Massachusetts Supreme Court reversed the Public Service Commission and refused to permit the issue of New York, New Haven & Hartford convertible bonds it is difficult to make an estimate, but there is one error that will commonly be made in regard to this decision that it will probably be quite impossible to combat. The decision will be hailed by thoughtless people all over the country as a reflection on the ethics of convertible bond issues. It is nothing of the kind. The Massachusetts law provides that

stock shall not be sold for less than the market value at the time of the sale. The court holds that by fixing the price now at which the bonds shall be convertible into stock ten years hence, the Public Service Commission is attempting to do something beyond its power. The reasoning used in arriving at this conclusion is a process of legal refinement which it is a little hard for the lay mind to follow, since the price which the company receives for its securities is the price for which they are sold today; and the mere fact that one class of securities is convertible into another class, were it not for the peculiarities of the Massachusetts statute, would be a detail which it would hardly be necessary for the regulative commission to go into. The price which the New Haven could get for its convertible 6 per cent. bonds would be the market price today at which a 6 per cent. note having certain privileges attached to it could be sold, and the price of the New Haven stock today is as much regulated by what investors think it will be worth ten years from now as is the price at which convertible bonds could be sold. However, the Massachusetts statute is quite unusual and few other states have modeled their corporation law so as to include all the provisions of the Massachusetts statutes.

The Margin of Safety and Convertible Bonds

Some of the most skillful financing that has been done for American railroads has been through the issue of convertible bonds. They are peculiarly adapted to the needs of certain classes of American investors and, on the other hand, have in the past

been peculiarly suitable to the growth and development of American railroad properties. It is highly desirable that there be as large a margin as possible between the fixed charges of a railroad company and its net earnings. On the other hand, only the strongest companies and those with long dividend records can sell stock at or above par. The temptation has been to sell bonds, and thus while dividend requirements remain stationary, fixed charges are continually mounting until the percentage of margin for the bondholder has become entirely too low to permit of the flexibility in disposal of surplus income that is so essential to the proper management of an American railroad. The Union Pacific and the Norfolk & Western are models of strong American railroads both as to credit, upkeep and margin of safety for bondholders. The needs of both have been extensively financed through convertible bond issues. With successive waves of unprosperous times following prosperous times; with a good bond market following a tight money market; a good stock market following a good bond market, and back to tight money again, a road with a convertible bond issue can take advantage of the period of good stock market and of good general business prosperity to reduce its fixed charges through the conversion of bonds into stock, putting it in an essentially better position to meet tight money and giving it a better credit with which to make use of a good bond market. Although some of the language of the Massachusetts Supreme Court decision might be interpreted to mean that the judges disapproved of the convertible bond issues, it must and should be interpreted only in the light of the peculiar Massachusetts statutes and not at all as a disapproval of one method of financing railroad companies' needs.

The Railways
and
the Shippers

There has been much talk in recent years about "co-operation" between shippers and railways, but usually real co-operation has been wanting. The talk about it commonly has been followed by hard fought contests before commissions and courts. Developments in regard to the pending application of the eastern roads for an advance in rates have been refreshingly different.

There has been no concerted movement by shippers in opposition to it. On the contrary, the sentiment of shippers generally favors it; and some of their organizations which vigorously opposed the advances sought three years ago are just as vigorously supporting the advances sought now. Prominent among these, for example, is the Illinois Manufacturers' Association. Three years ago it resisted higher rates effectively and bitterly. Today no commercial organization is more outspoken or energetic in its advocacy of them. The change in the attitude of the shippers is due partly to the development of a better understanding and more friendly feelings between railways and their patrons. It is due still more to a growing belief on the part of business men generally that the present situation of the railways is unfavorably affecting the business in all lines, and that unless the railways are allowed to advance their rates the condition of business in other lines is likely to grow worse instead of better. Mr. Brandeis may be able to show the Interstate Commerce Commission that the financial management of some railways has not been 100 per cent. pure. He may be able to show that the operation of all has not been 100 per cent. efficient. But the business men of the country are likely to reply that the same things can be shown to be true of every other class of business concerns, and that, anyway, the really pressing need now is to consider the present and future rather than the past.

**The Training
of Railway
Employees**

Railway managements will do well to heed the warning which was so clearly and forcibly given by George M. Basford at the meeting of the New England Railroad Club this week in his paper on the "Development of Young Men for Railroad Work"; and in this connection it should be noted that industrial concerns throughout the country are equally at fault with the railways in not giving proper attention to the selection, training and development of the young men who enter their service. Probably the most striking feature of the discussion which followed the presentation of the paper was a contribution from F. W. Thomas, supervisor of apprentices of the Atchison, Topeka & Santa Fe, in which he gave clear and unmistakable testimony that the ideas and principles which have been advocated by Mr. Basford have met with the very best of results. For instance, the advantages of the training in a modern apprenticeship course and a proper appreciation of the graduates from this course have made it possible for the Santa Fe to retain and keep in service 70 per cent. of all of the apprentices graduated during the past seven years; moreover, over 10 per cent. of these now occupy some official position. Where it was formerly the practice to employ from two to three thousand men a year to keep the shops going, it now looks as if within the next two years it would not be necessary to go outside to employ skilled mechanics. A number of years ago when Mr. Basford first brought to the attention of the railways the fundamental principles which should underly a successful modern apprenticeship system, it was the belief that although results might be apparent within a few years, the railroads must consider the expenditure of funds for this purpose as an investment and must not expect any very great returns within a period of ten years. The application of these principles on the New York Central Lines and the Atchison, Topeka & Santa Fe has shown, however, that the returns were almost immediate and that the increased expenses were almost immediately offset by the greater earning capacity of the apprentice boys. The returns are such that no road, large or small, should hesitate to install similar apprenticeship systems, and it is time that the work was being extended to the other departments.

DISCIPLINE WITHOUT SUSPENSIONS

DISCIPLINE without suspensions for misconduct has been in vogue on a considerable number of American railways for many years—some of them since 1895 and earlier; but the virtue of the plan is still denied. Hardheaded officers insist that it weakens the authority of the superintendent and impairs efficiency. To get some light on this question we have inquired carefully into the practice on the Baltimore & Ohio, where suspensions were abolished a year ago, and the results of this inquiry are given on another page. The officers of this road have made the change with eyes wide open, and they know the alleged unfavorable results on other roads; and they express satisfaction with the results of their first year's experience. They express no doubts; and have none, apparently. Employees also approve the transition. Employees' sentiment is not so valuable and instructive, because they cannot have the opportunity to take a comprehensive view of the situation; the evidence, for or against, is at best difficult to systematize and compare; but that their objections—which we may be sure have existed in some breasts—have not found voice, is a positive element of success.

Is a single year a long enough time to warrant clear and satisfactory conclusions? Bearing in mind that it is a system, not a body of men that we are studying, we may say, yes. The only bad effects to be feared among the employees are (1) that men will grow careless because they do not fear punishment for carelessness; (2) that they will become hopeless because of the apparent if not actual stiffening of discipline which is very likely to result when any officer gives increased attention to this part of his work, and (3) that these feelings will provide fuel for any disturbance which a grievance committee may wish to stir up. The fact that no evidence of these conditions has thus far appeared should be pretty good evidence that they do not exist to any serious extent. The thing is really in the hands of the superintendents. That they have managed it so well thus far is fair evidence that they can continue successful. May we not say that if next year, or five years hence, they fail, it will be their own fault? With the premise that his forces do not contain a dangerous percentage of men who are so bad that they ought to be discharged, we may say that any superintendent who cannot keep his forces reasonably contented and efficient, without the barbarism of suspensions, ought to resign his place. This is not saying that he is an incompetent man. His failure may be due to lack of assistants; or to pressure of other duties; or to unfair or unintelligent overruling of his decisions by superiors; but whatever the trouble, the real crux lies in the personality of this one man, the superintendent.

While the superintendent is the central figure in all discipline of trainmen, he is not by any means "the whole thing." Discipline—meaning the regulation of the work of employees for the highest practicable efficiency—is a matter which reaches from the directors of the road down to the lowest grade in the ranks. The officers above the superintendent may imperil his success by mere neglect. No general manager with the right kind of experience reverses a superintendent's decision, and reinstates a discharged trainman, except with the most careful explanation of his reasons. That explanation should be made known to everybody whom it affects. He embodies his decision in a statement so strongly fortified that no dozen lawyers could break it down. The manager who, in matters of this kind, relies on the authority of his position rather than on the strength of his reasons makes a great mistake. Brevity is a common weakness in railroad officers' written statements. Going into details, in giving reasons, as is done when one addresses the public, would often be profitable within the service, in addressing employees and subordinate officers. The larger the organization the more numerous the cases where a circular must take the place of the officer's personality.

The wise manager is very considerate of the superintendent; but he is also very strict. If a superintendent has to be overruled many times, the manager is at once confronted with the question whether that superintendent should not be transferred or removed.

To return again to the problems of the superintendent himself, he has to consider that the trainmasters have a task in some respects more difficult than his own. One of the weakest spots in discipline is revealed when an officer imposes a severe punishment hastily; acts on the impressions of the moment when an employee has been aggravatingly dull, perverse or reckless. Subsequently it becomes necessary to modify that punishment, and the officer lacks the courage to frankly admit the facts and conditions. The superintendent (we assume that he himself is not of a hasty temper) may have to overrule the trainmaster. Every decision in matters of discipline must be finally grounded in justice, however severe may be the adjustments necessary in the early stages. One of the best things for a trainmaster's education is for him to be required, as on the Erie, to approve, or disapprove, with reasons, all of the disciplinary acts of his superintendent.

All of the foregoing observations may be summed up in the single statement that when we abandon suspensions we are bound to follow, with Chief Justice White of the Supreme Court, at all times, the "rule of reason"; and that takes time and patience.

PROGRESS IN THE NATIONAL VALUATION

THE announcement that work will be started at once by the Board of Engineers of the Interstate Commerce Commission on the valuation of some of the southern roads, indicates that the actual field work on this important project will soon be actively under way throughout the entire country.

There has been a slight tendency in some quarters to criticize the board for its seeming inactivity. Its past course may be regarded as a favorable rather than an unfavorable sign. It means that it intends to do its work thoroughly and is devoting enough time to the many preliminary arrangements to enable it to proceed continuously, after it has got under way in the field. In perfecting its organization, it has had the benefit of no real precedent. The magnitude of its undertaking is unique. It has, therefore, been necessary that all steps be very carefully considered. The character and extent of the organization necessary to collect the required information in the field and to compile it in the office, the extent to which the data already in the possession of the railways shall be accepted and utilized, the provision to be made for the care of men while in the field, etc., are but a few of the many problems which it has been necessary to solve before the outdoor work could be actually begun.

The first problem confronting the Board of Engineers and the committee representing the railway companies in their negotiations was to establish a feeling of mutual confidence. Where so much is involved, many honest differences of opinion are to be expected; and without this confidence of each side that the other party is acting in good faith, it is difficult if not impossible to arrive at any agreement or to make much progress. The Board of Engineers and the committee of railway engineers have been successful in establishing this feeling of mutual confidence to a degree that already has assisted in the solution of a number of problems which have come up, and will undoubtedly be of great assistance as the work progresses.

The Board of Engineers of the commission has resisted pressure brought to bear upon it to rule upon some of the more important disputed points in valuation. The board has taken the position that the big problem now directly before it is that of securing a complete inventory of the railroad properties. After this is well under way it is expected that the board will devote its attention to the more debatable points in respect to valuation. In view of the wide diversity of opinion among the best au-

thorities regarding, for example, the proper methods to be used in valuing right of way, the allowances to be made for depreciation, etc., the board would be unwise to commit itself at the present time on any of these important points. The entire situation may be changed by further court rulings before it is necessary for the fundamental principles to be applied in the actual solution of the practical problems presented.

The care with which the board has begun its work, and the way in which it has resisted the demands for haste, should assist in creating confidence among railway men in general and in winning for the board their hearty co-operation.

PROPER LOADING OF FREIGHT CARS

THAT the proper loading of freight cars is an absolute necessity in order that the freight may be moved safely and with the least amount of damage to both the freight and equipment, has been, and is thoroughly recognized by all concerned in the transportation of all kinds of commodities. The shippers are especially desirous of having their products reach their destination in the best possible condition. The traffic departments of the railways want to give their customers the best possible service. The transportation departments want to get the cars over the road with as much despatch as possible. The mechanical departments want to keep their equipment in the best possible condition at the least expense. And last but not least, the "Safety First" organizations are seeking to eliminate all possible dangers in the operation of a railroad. The loading of freight cars is, therefore, an important feature. It may make or lose business for a road, as well as increase or decrease the cost of maintenance of equipment. If given the proper attention it will make for rapid deliveries at less cost and at a decrease in the chance for accidents.

The mechanical officers have endeavored to decrease the cost of car maintenance through their M. C. B. Rules for Loading Materials which have been generally accepted as being well drawn up and as a means adapted to alleviating the trouble due to this feature of railroading. But do they get the proper support? Although they formulated these rules they have no means of enforcing them. Their work is the correction of the defects in loading after the damage has been done, charging the guilty road a nominal sum for this correction. It is true the American Railway Association has approved and accepted these rules; but only so far as to give authority for the collection of these nominal charges. It was formerly argued that the guilty roads would take more care to see that their cars were loaded properly when they were assessed with these charges for readjusting. But that this is not the case on all roads is evidenced by the reports of the car interchange bureaus on which is placed the burden of locating these defects and causing the cars to be held until the loads are properly adjusted. It is the purpose of these bureaus to enforce these rules, but they are in the position of the man who locked his barn after his horse had been stolen.

It is the opinion of the interchange inspectors and the car department men generally, that the best results will never be attained until the firm support of the higher officers and the transportation department men has been secured. This problem is worthy the careful consideration of the American Railway Association, and that organization would be the most logical one to insist on concerted action in this respect. Concerted action is necessary, for in a competing territory it would be impossible to make a shipper conform to the rules if one road was more lenient than another.

From a "safety first" standpoint, proper loading is of great importance. With loads shifting in transit the side doors are apt to be forced out to such an extent that they will side swipe passenger trains on adjacent tracks. Again, in switching, cases have been cited where switchmen have been killed while coupling cars, owing to the load sliding off the car body as it struck the car to which it was to be coupled.

The Niagara Frontier Car Inspectors' Association has issued

a statement regarding the damage caused to the doors, etc., of freight equipment by the cars being improperly loaded. It states that, "No regard or respect is given the Master Car Builders' Association Loading Rules," and again, that "A careful check of several thousand cars set out to have loads adjusted indicates that 70 per cent. of the total number was on account of the loading being against the side doors, which in many cases were pushed completely off their fastenings." In a discussion of this subject before the Car Foremen's Association of Chicago at its December meeting, it was also stated that the greatest amount of trouble was experienced from the freight working out against the car doors, and it was evidently the general opinion that nearly all kinds of commodities require some kind of door protection.

The solution of the whole car loading question seems to require concerted action by all the roads, the insistence of the higher officers that the rules be strictly followed, the co-operation of all departments interested, and the careful and thorough instruction of all persons having anything to do with loading cars; and this means the shippers as well as the local agents throughout the country. The bills rendered for the readjustments at interchange points, although strongly objected to by the guilty roads, have failed to produce the desired results.

NEW BOOKS

Master Car and Locomotive Painters' Proceedings, 1913 Convention. Bound in paper, 132 pages. Size 6 in. by 9 in. Published by the association, Alfred P. Dane, secretary, Reading, Mass.

The forty-fourth annual convention of the Master Car and Locomotive Painters' Association was held in Ottawa, Ont., September 9 to 12, inclusive. The proceedings contain the report of the test committee, which was of particular importance and interest, as well as papers giving the latest information on the finishing of steel passenger train equipment; safety in the paint department; rough inhibitive paint; protection of steel freight equipment, and economy in locomotive painting. The last mentioned includes a lively discussion of the present practice in locomotive painting.

The Determination of Internal Temperature Range in Concrete Arch Bridges. By C. S. Nichols and C. B. McCullough. Bulletin No. 30, Engineering Experiment Station, Iowa State College, Ames, Ia.

One of the arguments used against the adoption of arch bridges, particularly those built of concrete, has been the fact that there is a decided lack of information as to the exact nature and amount of the internal stresses in such structures due to variations of internal temperature. There is practically no experimental data available on this subject, and designing engineers use a variety of assumptions in providing for such stresses. The experiments covered in Bulletin No. 30 of the Iowa Engineering Experiment Station have been made on highway bridges in the vicinity of Des Moines and Ames, Ia., and the results apply most directly to structures of that particular type and in that latitude. By placing thermometers in holes drilled into the concrete arches the internal temperature for a wide variation of external temperatures was secured. The results showed that the yearly range in internal temperature in such a reinforced concrete arch as those considered in the tests is not far from 80 deg. F. It is concluded by the writers that the relation between yearly temperature range and depth of concrete is best expressed by the equation:

$$y = 90 - .53x$$

y being expressed in degrees Fahr. and x in inches. It is recognized, however, that other factors, such as presence of water, direction of prevailing winds, etc., may modify these results considerably. It is further concluded that to render an arch structurally safe, provision should be made in the latitude in which these tests are made for stresses introduced by a temperature variation of at least 40 deg. F. each way from an assumed temperature of no stress. Particular circumstances may demand the use of a greater variation to prevent the appearance of cracks.

Letters to the Editor

INSTRUCTIONS FOR BRAKEMEN

KANSAS CITY, Mo., November 24, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Below you will please find a few notes of instructions to student brakemen, which were submitted by one of the best known officials on one of the western trunk lines, which he believes, if followed closely, will soon make a full fledged brakeman of the student:

"Learn to cuss the engineer the first thing. It makes a good impression on the natives and also impresses the conductor with your ability."

"Always try to beat the conductor to the office whenever a stop is made; he may need your help in understanding the orders. Don't worry about a possibility of a little thing like a brakebeam being down or a hot box. These defects will always make themselves known if you will give them time."

"When working with a long string of cars or around a curve, always get as near the rear end as possible. The conductor may need your advice about doing the work; the engineer is supposed to guess at what you are doing and are about to do."

"In making a coupling to other cars, always wait until they are about one-half car apart. Then give the engineer a washout signal and swear violently if he gets a lung. He ought to have had sense enough to know what you wanted to do."

"When you take off a defective air hose, throw it as far as possible from the right of way; it will save you the trouble of taking it to the caboose and prevent any possibility of the trackmen finding it to send in. Bear in mind that the company is rich and there are plenty more in the store room."

"Don't worry about little things like leaks in the train line. This is not your business anyway; the inspector is paid for this."

"Don't fail to express your opinion of the despatcher if he lines up any extra work for you. The sole aim of the company running freight trains is to enable you to meet the pay car."

The above came to my notice a few days ago and I am forwarding to you thinking possibly you might care to publish it for the benefit of the uninitiated.

DIVISION ENGINEER.

SUGGESTIONS FROM EMPLOYEES INVITED ON ENGLISH RAILWAY.—A short while ago mention was made in this paper of a plan of the Delaware, Lackawanna & Western to reward its employees for suggestions relating to more efficient operation of the railroad. The Great Western Railway of England has recently issued a circular, announcing a somewhat similar plan. Suggestions are invited on all matters affecting the organization, conduct and operation of the company's business. The suggestions will be taken up by a committee, and a payment or other suitable acknowledgment will be granted by the company in any case in which a suggestion is recommended by the committee for adoption, whether it be eventually put into operation or not.

A RAILWAY'S ELECTRIC LIGHTING PLANTS IN MANCHURIA.—The South Manchuria is receiving a fair amount of revenue from electric lighting plants, which it maintains at Dairen, Mukden, Changchun, Antung and Liaoyang. It also holds a controlling interest in the lighting plant at Newchwang, which is operated in connection with the water works establishment at that port. Current is furnished to 6,600 households at Dairen and to about 1,200 households at Mukden, Changchun and Antung. Plans are under way to increase the capacity of several of the plants and at Mukden the construction of an electric street railway is also under consideration. At the present time the city is served by a short horse-car line only.

Record Discipline on the Baltimore & Ohio

Twelve Months' Experience With Corrective Instead of Punitive Discipline With Over 20,000 Trainmen

The Baltimore & Ohio has not suspended a man in train service for over 12 months; and the administration of discipline without suspension, begun January 1, 1913, has now to its credit a successful year. Credit for good behavior and discredit for bad are elements in the management of large and scattered bodies of men—like the employees of a railroad, working most of the time out of sight of the supervising officer—which cannot be collated and summarized in statistical form except after a considerable length of time, and a single year is relatively a short period; but the officers of the road already express decided satisfaction with the action they have taken, and the facts which they give to sustain their opinions justify the conclusion that the good results are permanent. Those employees who have expressed themselves are also uniformly favorable in their opinions.

On the Baltimore & Ohio, as elsewhere, there are, no doubt, men who in some degree cherish the old notion that suspensions are more business-like (and therefore more desirable) because they seem to square accounts. A man lies off a month, loses a hundred dollars, and takes to himself the satisfaction that he has paid for whatever loss he has caused the company (ignoring the fact that the loss may have been ten or a hundred times his pay, or that his error though involving no immediate danger, may have produced a potential danger more grave than a loss of ten years' pay). Insofar as this feeling does exist, time and education will be required for its eradication. No superintendent on the B. & O. has had any trouble with it, thus far. And, whatever may be the feeling of either the officers or the employees of the road there is the solid fact that whereas 59,000 days' pay was lost by suspended employees in 1912, not a dollar was thus lost in 1913.

If any superintendent feels that this gain has been in any degree offset by a weakening of the morale of his force he has not taken the trouble to impart his view to his general manager.

About 20,000 men are employed on the Baltimore & Ohio in the classes over which the discipline bureau has supervision. Assuming that, say, 75 per cent. of these men, ordinarily, will go through a year without being made the subject of formal censure, we may say that the remaining 25 per cent. have this year been saved an average of ten or twelve days' time each.

Following are the distinctive features of the circular of A. W. Thompson, third vice-president, by which the new system was put into effect January 4, 1913.

The practice of suspending employees in engine and train service because of infraction of the rules or for other causes, will be discontinued, and discipline will be maintained by record, reprimand or dismissal. A complete and accurate service history of all employees affected by this order will be kept in the office of each division superintendent and also in the discipline bureau at Baltimore. This bureau is in charge of John G. Walber, formerly assistant general manager and superintendent of transportation.

No entry will be made a part of the record of any man until his case has been fully investigated. Records are kept in duplicate, one copy in the superintendent's office, and one in the discipline bureau. The employee is advised in writing of every entry and acknowledges its receipt in writing. . . . An employee, upon his request in writing, will at any time be given a copy of his service record. Should an employee at any time display unusual loyalty to the company or by the exercise of superior judgment, protect the lives of the public or his fellow employees, or save the company's property from damage, proper entry will be made on

his record; as such entries will weigh heavily against anything which might appear to his discredit.

"The benefits derived from discipline, to a large extent depend upon its proper administration and it is necessary therefore that investigations be held promptly, so that employees may know at the earliest possible date the action taken."

The system applies to all the roads controlled by the Baltimore & Ohio, including the Staten Island Railroad, but not the recently acquired Cincinnati, Hamilton & Dayton. The number of employees subject to it, as before stated, is about 20,000. The employment bureau, which keeps records of all applications for employment, except unskilled laborers, has on its card catalogs not only these 20,000, but also 7,000 shopmen, etc., or 27,000 men altogether. The average number of persons employed on the system, in all departments, during the past year, was about 65,000. As always, the rules provide that employees guilty of the graver offenses shall be dismissed; and the same applies to those whom the superintendent, after careful investigation, finds to be unsafe men. This last provision is to meet the cases of men who do not commit any single offense which will warrant dismissal, but yet who repeatedly, by small derelictions, give evidence of unfitness of temperament or habits. The records, however, show very few such investigations.

The circular to officers was supplemented by one to employees, explaining the company's attitude toward the public, and the employees, and on the general subject of safety and efficiency. This circular says, in part:

"Whenever large numbers of men are associated in any enterprise, the interests of efficiency and safety demand that their actions shall be governed by a suitable set or system of rules and regulations. . . . The safety of the public, and that of the employees depends largely upon rigid adherence to the rules of good practice. . . . No continuous service performed by man can be perfect, but a high state of discipline and a careful selection of men will produce a high class of service.

"Suspending a man from the service for seven, fourteen, thirty or sixty days, as the case may be, cannot possibly make him better. On the contrary, it deprives him of the opportunity to earn money, and not infrequently, the punishment bears most heavily on those who are dependent upon him for support.

"In one year employees connected with train service and work connected with train operation on the Baltimore & Ohio lost, through suspensions, over 59,000 days. It does not seem that the maintenance of discipline should require such methods. . . . No discipline will be decided upon without a full and impartial investigation by the proper official. . . . Disloyalty, desertion, dishonesty, use of intoxicants, wilful neglect or gross carelessness, making false reports or statements, or concealing facts concerning matters under investigation, or other conduct that renders service of employees unsatisfactory, will be considered sufficient grounds for dismissal.

"Promotions, as in the past, will depend upon a man's record and his fitness for increased responsibility. When these are equal as between two men, the senior will be given preference.

"The purpose in making this change in the method of administering discipline is to bring about a higher state of efficiency, by establishing among employees in train service a feeling of security in the confidence that faithful service

will be recognized and rewarded, and the certainty that reward and promotion will not follow indifferent service."

Though the Baltimore & Ohio has no suspensions it has no "Brownies" either. Demerits, as a substitute for days—one demerit the equivalent of one day—to be set down in a column and if they accumulate to be added up, are unknown. A man who has been required to appear "on the carpet" twice in the past year will have two entries telling just what he did (or neglected to do) in each case; but these will show no arbitrary measure of the magnitude of either of the two offences. If he should come before the superintendent again, that officer (assuming that he has no satisfactory personal recollection of the earlier investigations) must estimate, as intelligently as possible, from the written record, what bearing the former offenses should have on the action to be taken in connection with the case in hand. It may be remarked, in passing, that in this absence of arbitrary or mathematical measurements of offenses, the B. & O. plan corresponds to Mr. Brown's original practice on the Fall Brook Railroad. In the articles by Mr. Brown, which were published at that time, there is no mention of the

10/31/09—Burnesville—Not available when wanted for service as brakeman with Extra east engine 1234. Left his calling place without permission and without advising caller of his proposed whereabouts. Div. File D-411.

7/15/10—Sand Hill—Flagman for Train 2nd 100, engine 3456 (Conductor J. Q. Smith). His train stopped by hot box between Freeburg and Sand Hill. Was back behind the caboose with flag but one car length. Depended on straight track and long sight for protection. Improperly protecting his train and gross violation of flagging rule. No accident. Div. File D-489.

5/10/12—Brownstown—Train 10, engine 2000 (Conductor John Doe, Engineer William White), parted, due to old defect, 63 cars from the engine. Train contained 70 cars. Unable to back train in order to couple up; waited until the following train, No. 3, shoved his rear down. This wait consumed 3 hours and 30 minutes. Should have taken the forward part of train to Harristown, 1 1/4 miles distant, and set it off, which would have enabled him to shove the rear portion of train back and take it forward to terminal (Greenville), without violating "Hours of Service" Law. Poor judgment on part of Conductor and Engineer. Div. File D-666.

1/ 6/13—Unionburg—Conductor of Train 23. Accepted Form "A" improperly filled out. The Form "A" had no signature; also failed to show trains due and passed (Efficiency Test). Div. File D-898.

THE BALTIMORE & OHIO RAILROAD COMPANY
DISCIPLINE REPORT, MONTH OF NOVEMBER, 1913.

X & Y DIVISION

Date of Offense	Name	Occupation	Date	Extent	Discipline	Nature of Offense
Nov. 4th	Z. Q. Bouncer..	Frt. Engineer....	11/19	Reprimanded...		Engineer of helper engine 1234. When coupled to train 3rd 71 at Brown Hill, notified the Brakeman not to couple air between his engine and caboose. Brakeman notified Engineer Bouncer that air would be coupled in accordance with instructions, which was done. After tipping hill, Engineer Bouncer applied air, pulling drawbar out and parting train.
5th	A. B. Smith....	Frt. Conductor....	11/20	Dismissed		Conductor of Train No. 99. Failed to report the fact that extra 1913 east, light (Engineer C. H. Flag), overlooked meeting point and came upon his train, No. 99, doing work and occupying main track at Belt Line; also other irregularities defined in another report. No accident occurred.
8th	J. Q. Adams....	Pass. Engineer....	11/23	Reprimanded...		Engineer of engine 2345, Train 411. Overran train order signal at Smithsville about 2,100 ft.; also for disregarding stop block at Pine Hill on Nov. 9, while in charge of train 412 (separate report); for which failures he has been barred from passenger service. No accident occurred.
12th	R. H. Smedley..	Frt. Brakeman...	11/27	Dismissed		Violated Rule "G." Was seen by Superintendent at Water and 8th streets apparently under the influence of intoxicants.
19th	T. O. Ticker....	Operator	11/30	Reprimanded...		Operator at Barntown Office. Through a misunderstanding with Silkville Office, gave extra 3456 east a clear signal when block ahead was occupied by extra 4567. No accident.

"demerits" which, in blocks of 10, 15, 20 and 30 have become familiar on some roads which have abolished suspensions.

The style of the Baltimore & Ohio record is indicated in the fac-simile shown on this page, slightly reduced, of the upper part of that page in the book which is devoted to John Doe, certificate No. 123,321. The seven columns of the blank have space for two or three times the number of entries here shown; and the lower part of the page is left blank for the details of instances of bad (or specially good) behavior. John Doe, 123,321, has the following entries:

It will be observed that the record goes back several years. Preparatory to the establishment of the new system a year ago the records of all employees in train service were carefully examined, for five years back, by a superintendent who devoted practically two years to the work; and every record was revised and corrected, where found to have been imperfectly kept; or, in the case of entries which, for lack of necessary data could not be satisfactorily completed the employee was given the benefit of all doubts, and the offense was wiped off the list.

Name	Employed as	Blank	Division
Born, Date	Place	R. D. Certif. No.	
Doe, John	Laborer		
7/15/87	Oakland, Md.	123321	
Date	Employment and Changes in Occupation	Division	Examined by
			Mechanical.....M Air.....A Transportation.....T
7/18/06	Laborer	Blank	
11/13/07	"	"	Resigned
8/21/08	Frt. Brakeman	"	Re-employed
10/17/11	" Conductor	"	
1/13/12	"	"	Furl'd
4/13/12	"	"	Resumed
10/11/13	" "	"	
			T - By Exam Com'te No. 9061.

MONTHLY SUMMARIES.

Each month each division superintendent makes a summary of all disciplinary action taken during the month. A sample of a part of such a report, from the X and Y division, is shown herewith.

These monthly reports are summarized in a statement of which a sample is given in exhibit C.

Another summary, form "727 A-B, Special," is made by the discipline bureau, showing a greater variety of causes, but condensing them into fewer classes. It gives, in separate columns for each of the five classes of employees, the number of reprimands and the number of dismissals (with another column showing totals for a preceding period, for comparison) classified according to an elaborate list of causes. This statement fills six sheets, and the causes, shown in the first column of each sheet, are as follows:

Accidents—Collisions and sidewipes
—Road.
Accidents—Collisions and sidewipes
—Yard.
Switches—Run through and damaged.
Switches—Interlocking and other
switches mishandled.
Accidents unclassified.
Accidents, failure and improper re-
porting of.
Damage to cars (not otherwise
specified).
Flagging—Violation, accident result-
ing.
Flagging—Violation, no accident re-
sulting.
Clearance—Failure to clear superior
trains.
Clearance—Using Block without
permission.
Clearance—Failure to report in to
clear.
Clearance—Running ahead of time.
Signals—Disregarding stop signal—
Accident.
Signals—Disregarding stop signal—
No accident.
Signals—Moving without, or on im-
proper.
Signals—Failure to properly display
or call attention to.
Signals—Improper classification
signals.
Station Stop—Missing or over run-
ning.
Orders—Accepting improper.
Orders—Failure to sign.
Orders—Running without.
Orders—Improper handling by Op-
erator.
Orders—Disregarding.
Speed Limit—Exceeding.
Registering—Improper and failure
to register.
Unauthorized persons carried on
train or engine.

Mechanical—Failure to have neces-
sary working equipment.
Mechanical—Shortage coal and
water.
Mechanical—Unclassified carelessness.
Failure to cut off engine when tak-
ing coal or water.
Delay to trains (Cause not otherwise
specified).
Delay to yard work (Cause not
otherwise specified).
Telegraph & Levermen—Delay re-
porting trains and other tele-
graphic delays.
Telegraph & Levermen—Improper
spacing of trains.
Telegraph & Levermen—Improper
blocking trains.
Telegraph & Levermen—Improper
language on wire.
Telegraph & Levermen—Misuse of
and improper handling of mes-
sages.
Telegraph & Levermen—Trains run
on wrong track.
Telegraph & Levermen—Miscella-
neous irregularities not otherwise
specified.
Absent without permission.
Attachments, assignment of wages,
etc.
Cars handled out of route.
Cars handled on improper bills.
Changing tricks and runs without
permission.
Duty—Refusing, desertion, etc.
Duty—Not available when wanted.
Duty—Late for.
Duty—Sleeping after called.
Duty—Sleeping on.
Company material—Misuse of.
False statements and misrepresen-
tation.
Fighting and Disorderly conduct.
Incompetent.

Stopping train from rear unneces-
sarily.
Neglect to assist with hand brakes.
Accounts—Improper handling of
Reports, shortages, etc.—Train.
Accounts—Improper handling of
Reports, shortages, etc.—Station.
Accounts—Irregularities handling
cash fares, tickets, etc.
Crossings—Blocking of.
Mail—Mishandling of U. S. Mail.
Hours of Service Law—Violations.
Mechanical—Low water; damage to
crown sheet.
Mechanical—Low water; no damage.
Mechanical—Improper inspection.
Mechanical—Improper handling air.
Mechanical—Poor time, low steam,
improper firing, etc.

Impudence to Company patrons.
Insubordination.
Intoxicants—Use of.
Investigation—Evading.
Irregularities—Failure to report.
Pay—Irrregularities, overpaid and
not reported, improper claims, etc.
Robbery.
Relief—Requesting on road.
Smoking on duty.
Stepping in front of moving train.
Transportation—Misuse of.
Poor Management & Judgment
(Not otherwise specified).
Indifference & Carelessness (Not
otherwise specified).
General Unsatisfactory and Un-
desirable employee.
Miscellaneous (Minor).

Form 727 X is the blank on which an employee is advised when an entry is made on his record. It contains an exact copy of the record. Unfavorable records are in the form shown above. Favorable records are written in red. Following are three samples of these:

September 19, 1913.—Conductor E. W. A. Commendation.—Regular conductor of passenger trains No., and, running between and On account of courteous treatment to passengers and the manner in which he performs his work, a passenger on these trains on September 19 wrote a complimentary letter to the president of the company.

October 17, 1913.—Engineer B. H. M.—When fireman of train 520 was removing signals from his engine at station "A," he unfortunately fell to the platform, seriously injuring himself so as to incapacitate him from service. Engineer who was going to deadhead on this train to Denmark, witnessed the accident and, unsolicited, volunteered and did take the place of the disabled fireman, firing the engine through to Denmark without delay. His loyal action under emergency circumstances commendable. Div. file

November 12, 1913.—Engineer F. M. S.—Engineer in charge of Engine on train No. Handled train with such precision as regards schedule, and performance in matter of stops, starts, etc., being so near perfect as to excite comment from an officer of the company on board his train. This commendatory entry placed on his record in consideration of high standard of service.

Following is a copy of one of these forms issued after a special investigation of an engineman's record:

December 4, 1913.—Engineer R. L. H.—Record reviewed by Superintendent Blank, and shortcomings explained. Was in-

THE BALTIMORE & OHIO RAILROAD COMPANY
DISCIPLINE REPORT; SUMMARY FOR THE MONTH OF NOVEMBER, 1913* (EXHIBIT C)

Classification	Dismissed						Reprimanded-Record						Total					
	E	F	C	B	O	T	E	F	C	B	O	T	E	F	C	B	O	T
Improper flagging																		
Overlooking meeting point.....	1	..	1	..	1	1	..	..	..	1	..	1	..	1	1	..	..	2
Overrunning train orders or block signals.....	1	..	..	..	..	1	..	4	..	..	..	..	..	1	..	..	..	4
Failure to report irregularities.....	..	1	..	..	1	1	..	..	..	..	1	1	..	1	..	1	..	2
Violation of Rule G (Use of Intoxicants).....	2	..	6	1	9	..	..	..	2	..	2	..	2	..	2	..	8	11
Using profane language in the presence of passengers.....	1	..	1	..	1	..	1	..	1	1
Carrying passengers without necessary transportation.....	2	2	..	..	..	1	..	2	2
Improper handling of block signals.....	1	..	..	..	..	1	..	..	..	1
Neglecting to see train orders.....	1	..	..	..	..	1	..	..	..	1
Neglecting to see that air was coupled up on cars occupying main track.....	1	..	..	..	..	1	..	..	..	1
Neglecting to see train order signals.....	2	1	1	1	5	..	2	1	1
Unavailable for duty.....	5	8	..	3	..	16	5	8	..	16
Disappeared (Marked out of service).....	2	..	1	..	3	..	2	..	1	3
Working under assumed name.....	..	1	2	3	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Crossing on main track without necessary permission.....	1	..	..	..	..	1	..	..	..	1
Refusing duty.....	1	..	..	..	1	..	..	..	1
Failure to report in clear.....	2	..	..	..	2	..	..	..	2
Proceeding in fog without caution, resulting in accident.....	1	..	..	..	1	..	..	..	..	1
Neglecting to get necessary signal, leaving rear end.....	1	..	..	..	2	1	..	..	1	2
Improperly handling passenger equipment, causing delay.....	1	..	..	..	1	..	..	..	..	1
Refusing to make personal injury report.....	1	..	..	..	1	..	..	..	..	1
Dropping sand on interlocking switches.....	1	..	..	..	1	..	..	..	..	1
Insubordination.....	1	..	..	1	..	..	..	..	1
Imparting incorrect information to passengers for connecting trains.....	1	..	..	1	..	..	1	..	..	1
Reporting late for duty.....	1	2	..	..	..	..	1	2	..	3	1	2	..	..	3	3
Improper firing, causing steam failure.....	1	..	..	1	..	..	1	..	..	1
Reporting on relief when called.....	1	..	..	1	..	..	1	..	..	1
Delay to 1st class train, due to bad judgment.....	1	..	..	..	1	..	..	..	..	1
Laying off without permission.....	1	..	..	..	..	..	..	..	..	1
Total	1	2	2	7	4	16	17	17	6	12	4	56	18	19	8	19	8	72

* Key: E—Engineers; F—Firemen; C—Conductors; B—Brakemen; O—Operators; T—Total.

structed concerning necessity of improvement in the manner of performing duties, and conduct.

This probably meant that the next serious offense would mean dismissal, but, it will be noted, that expression was not used.

This or any other action on discipline finds its final record in one of these forms (727 X), sent out by John G. Walber, head of the discipline bureau, which notice is acknowledged by the employee. The employee sends his acknowledgment to the superintendent and from there it is sent to Mr. Walber.

That the notice comes from the discipline bureau does not mean that the head of that bureau decides questions for the whole road. Each superintendent continues to be king of his own kingdom. It is the function of the head of the discipline bureau to see that practice is as nearly uniform as possible throughout the company's system; and in carrying out that function he may have to overrule a superintendent; but cases of this kind have been exceedingly rare.

GENERAL CONSIDERATIONS.

The most specific adverse influence in adopting "record discipline" is the feeling that, if all of a man's faults are faithfully and fully recorded and the record is allowed to accumulate on a page of a book, dismissal is sure to follow, sooner or later. If a man's main purpose is to keep his job—rather than to worthily fill his position—there is something in this; for, though the superintendent who suspends a man for 30 or 60 days is bound by all considerations of duty to the public and to himself to remember the fault for which the suspension was made, it is probably true that in the past he has not always done so. A superintendent, being human, is liable to admit, tacitly, the man's claim that by losing money he has restored his reputation. That is an easy way to be rid of the subject. But a conductor or an engineman who is intelligently honest with himself, and who realizes that his family and all his own best friends would prefer to have him a safe railroader rather than one who depends on a good record in the past, and who thus may deceive himself as to his ability to do his dangerous work in the safest way—such a man surely must wish to take any reasonable means to improve himself. And that an honest examination of one's own record often stimulates a man to improve is testified to by a great many conductors and enginemans. One Baltimore & Ohio conductor, whose record is blank—no reprimands—procured a copy of his page in the discipline book and put it in a handsome frame to hang in his parlor—a constant incentive to him to see that the *blankness* of the page shall continue indefinitely. Promotion of this feeling is, of course, a main object of the whole disciplinary organization, and progress in this direction is evidence of its success.

On one division one of the employees' committee-men believes that men who are disciplined do not promptly take action, as would have been done under former conditions. A man who is suspended for ten days is likely to urge his committee to do everything possible to get the penalty taken off or mitigated. Now, the same man, under the same charges of misconduct or neglect, takes things easy. The committee-man thinks that if this spirit prevails, the employees may become so careless as to let records accumulate against them. However, he expects that the committees will take action to instruct the men in such a way as to lead all of them to look after their interests. Other reports indicate the opposite of the above; that men take an increased interest in having their records made right as quickly as possible.

Abolition of suspensions has been reported on some roads as having been tried and found to be a failure; and many railroad officers have expressed themselves as convinced of the inexpediency of trying to manage a large force of railroad employees without the aid of the rigorous "strong arm" features of a system in which suspensions are regularly employed as the simple and easy means of cutting off what would otherwise be endless and unprofitable discussions and appeals; and of compelling reflection and repentance on the part of men supposed to be un-

able or unwilling to turn their minds in these profitable directions until they have suffered a financial shock.

We have not investigated these reports with sufficient thoroughness to be able to make searching comparison between the practice on those discouraged roads and that on the Baltimore & Ohio, and no such comparison will be attempted; but it seems quite clear that a vital element of the success on the B. & O. has been the careful personal attention given to all features of the discipline by each superintendent, and to the constant supervision by the head of the discipline bureau, which has insured that the different superintendents were at all times following one uniform policy.

Failures on other roads have not been due wholly to a single cause. Some, without doubt, have been due to injudicious action on the part of superintendents and there has been no need to look far for an explanation. But a failure may be insidious and slow in manifesting itself, and may be due to apparently trifling neglects. There can be no warrant for the assumption that success is assured if only the superintendent is competent and is "on his job," and is having ordinary good results. The superintendent need not be dull or lazy to insure poor results. The capable superintendent may find himself in trouble, simply by dropping a few stitches in apparently small matters. But the officer who sees that the simple rules of promptness, fairness and firmness are invariably followed, not only by himself but by all of his subordinate officers in every case, has laid the foundation of successful discipline. If he does not succeed in giving to his employees what they will acknowledge to be the highest practicable satisfaction, he may well ask himself whether such employees are fit men to be retained in the service.

The Baltimore & Ohio superintendents seem to have worked their "revolution" with care and discretion. Probably it is not yet time to ask them to let a jury find a final verdict on their respective administrations, but they manifest the progressive spirit which justifies expectation of an entirely satisfactory outcome. They will not, perhaps, approve our use of the word "revolution"; but it is a fact that in the more serious classes of disciplinary decisions both the officers and the employees feel, and feel profoundly, that the abolition of suspensions is a change which goes to the foundation of the relations between employer and employee. We have sounded representative employees, as well as the officers, and there is some evidence, already, of an improvement in the attitude of the employees' committees towards the company. As "grievers" are supposed to live on grievances this is significant.

EMPLOYMENT BUREAU.

Two months prior to the establishment of the discipline bureau, or on November 1, 1912, the company established at Baltimore an employment bureau which keeps the records not only of all employees in every department, except unskilled laborers, but of applicants, as well; and this department works in co-operation with the discipline bureau, both being maintained in the same building. The general scope of the employment bureau will be understood from the following paragraphs, taken mainly from the circular of the third vice-president putting the bureau in operation.

All persons applying for employment, except unskilled laborers, fill out a blank, form 726. If the applicant has been previously employed elsewhere, whether in railroad work or other employment, he is called upon to fill out other forms, one for each separate former employer, giving his experience, references, etc. Still another form is provided for men who have to be examined for some special qualification. The employing officer at once sends all this information to the employment bureau. If he has no work for an applicant he so informs the employment bureau, so that if there is an opening on some other division, to which it would be for the interest of the company to send the applicant, the officers of such division may be informed. In the case of every applicant who appears in person the employing

officer must note on the application blank his opinion of the candidate.

Employment is conditional upon applicants passing satisfactory examinations and furnishing satisfactory references. Pending receipt of reports from the employment bureau, service must be considered as only temporary. If the application is rejected, the employment will be terminated as soon as possible after advice from the employment bureau, and the termination reported to the bureau.

Minors will not be employed in train service or other hazardous work, and for other positions only in accordance with whatever laws may be in effect; and if under sixteen years of age the written assent of parents or guardians must be secured.

A monthly report is made of transfers between departments or divisions, changes in occupation, rates of pay, leaving the service or deaths, the reason being shown for leaving the service.

The employment bureau also keeps the service records formerly kept in connection with the pension feature in the relief department.

Reports are made to the employment bureau of examinations or re-examinations of employees who are subject to such examinations.

When employees, other than those in train service, are censured, information as to the circumstances in the case and the discipline administered is forwarded to the bureau for record. The same action is taken in connection with employees who are commended for meritorious service.

Certificates showing the character and length of service of former and present employees are issued only by the employment bureau. Such information is furnished only on execution by the employee of a suitable written request and release.

At the opening of the bureau for business careful records were made of the men then in the service, showing all facts, so far as practicable, back to September 1, 1905. Each month every employing officer reports to the bureau all transfers and changes made in his department, as just noted. Another report is made showing the names of persons entering the service each month, whether for the first time or on re-employment, after furlough, suspension or dismissal.

In the eight months ending with August, 1913, the number of applications considered by the employment bureau was 11,626, of which 476 were rejected. Of the remainder, 11,150, substantially all were employed. The proportions of the different classes may be seen from the statement for the month of August, in which the company employed 705 brakemen, 315 firemen, 86 telegraph operators and 44 shopmen.

That among the 476 men rejected were some frauds, such as men giving assumed names, ex-convicts and others who are not only undesirable but actually dangerous, goes without saying. The maintenance of a bureau of this kind is necessary for the purpose of excluding these, and, on a system of railway which, like the Baltimore & Ohio, extends into a dozen states, is necessary merely as a means of enabling the different divisions to aid and protect each other. Beyond this, it is necessary, in these days of hundred-page questionnaires from the government, that a railroad company shall be at all times able to give affirmative evidence that it has selected its employees with adequate care. Only by the most rigid system, and by the concentration of the clerical and investigating work in a single bureau, making available the best expert ability, can a satisfactory body of records be maintained.

EXPLOSION IN RUSSIAN ROYAL TRAIN.—About two weeks ago an explosion occurred in the Russian royal train, which had been standing in the Central station at Rostock, Mecklenburg, Germany. The train had been standing there for some days in readiness to convey the Dowager Empress of Russia to St. Petersburg. The explosion, which is attributed to faulty machinery, occurred in the lighting apparatus and injured seven railway employees.

TRAIN ACCIDENTS IN NOVEMBER¹

Following is a list of the most notable train accidents that occurred on railways of the United States in the month of November, 1913:

		Collisions.		Kind of Train.	Kil'd Inj'd.
Date.	Road.	Place.	Kind of Accident.		
*4.	Balt. & Ohio.....	Alexander.	rc.	P. & F.	0 5
6.	Lake Shore.....	Alliance.	bc.	F. & F.	3 1
*8.	Louisville & N.....	Franklin.	rc.	F. & F.	1 4
14.	Boston & Albany....	Pittsfield.	xc.	F. & F.	3 9
16.	Central Vermont....	St. Albans.	bc.	F. & F.	2 0
*28.	Virginian	Keever.	bc.	F. & F.	4 1
*28.	Cin., H. & D.....	Bates.	rc.	F. & F.	1 1

Derailements.

Date.	Road.	Place.	Cause of Derailment.	Kind of Train.	Kil'd Inj'd.
1.	Lehigh Valley.....	Hazle Creek J.	Runaway.	F.	1 2
†2.	Mo., Kan. & Tex.....	Fratt.	exc. speed.	F.	1 3
3.	Southern	West Point.	unx.	F.	1 3
4.	Chicago, B. & Q.....	Genoa.	acc. obst.	P.	1 6
9.	Raquette Lake.....	Fairview, N. Y.	acc. obst.	F.	3 0
†13.	Central Georgia.....	Clayton, Ala.	d. track.	P.	9 40
†13.	Pennsylvania	Wooster, O.	unx.	P.	3 3
14.	Cin. N. O. & T. P.....	Annadel.	unx.	P.	1 0
18.	St. Louis & S. F.....	Cordova, Ala.	unx.	P.	1 3
24.	C. C. C. & St. L.....	Shiloh, O.	boiler.	F.	0 3
30.	Colo. & So.....	Central City.	unx.	P.	1 0

The trains in collision at Alexander, Ohio, on the 4th, were a southbound passenger and a southbound freight. The passenger ran into the freight as it was entering a side track. The caboose was wrecked and took fire from its stove; and the caboose and two freight cars were burnt up. Five passengers were injured. The passenger train had been flagged and its speed slackened, but nevertheless it followed the freight at excessive speed.

The trains in collision on the Lake Shore & Michigan Southern near Alliance, Ohio, on the 6th were northbound and southbound freights, both running at good speed when they collided. Three trainmen were killed and one injured.

The trains in collision at Franklin, Tenn., on the night of the 8th, were northbound freights. One engine, a caboose and several cars were wrecked. One brakeman was killed and four other trainmen were slightly injured. The wreck took fire and was partly burned up. The cause of the collision was failure of the men in charge of the leading train to protect by red signals.

The trains in collision on the Boston & Albany at Pittsfield, Mass., on the afternoon of the 14th, were a work train and an engine without train. Three employees of the work train were killed and nine were injured. The light engine had stopped only a short distance away; and had then proceeded past a stop signal set against it.

In the butting collision of freight trains near St. Albans, Vt., on the 16th, one fireman and one trespasser were killed and both engines and 14 cars were badly damaged. The cause of the collision was a mistake in understanding the dispatcher's orders.

The trains in collision near Keever, Va., on the 28th, were an eastbound extra freight and westbound local freight No. 33. Both engines and ten cars were wrecked. Four trainmen on the eastbound train were killed and one on the westbound was injured. Three of the bodies of the killed were badly burned. The cause of the collision was the failure of the eastbound train to take siding at Keever. The men in charge overlooked their orders.

The trains in collision at Bates, Ohio, on the evening of the

¹Abbreviations and marks used in Accident List:
 rc, Rear collision—bc, Butting collision—xc, Other collisions—b,
 Broken—d, Defective—unf, Unforeseen obstruction—unx, Unex-
 plained—derail, Open derailing switch—ms, Misplaced switch—acc.
 obst, Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while
 running—P. or Pass., Passenger train—F. or Ft., Freight train (including
 empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly
 destroyed by fire—Dagger, One or more passengers killed.

28th, were northbound freights. The leading train was at a standstill on a yard track; and the caboose was crushed and afterwards damaged by fire. One brakeman was killed and another was injured. The cause of the collision was misunderstanding as to which track should be used by the incoming train.

By the wreck of two freight trains near Hazle Creek Junction, Pa., on the 1st, a brakeman was killed and two other trainmen slightly injured. An eastbound train, consisting of 39 cars of coal, was left standing on a grade while the engine was cut off to take water. Not enough hand brakes were applied, the air leaked off and the train ran away, pushing the engine ahead of it on the steep grade; and it was derailed at a sharp curve. The wreckage fouled another train moving in the same direction on a branch track.

The train derailed near Fratt, Tex., on the 2nd was freight train No. 73, second section. Seven cars fell through a trestle bridge to the ground 40 ft. below. A man riding in one of the cars in charge of freight was killed and three others were injured. The cause of the derailment appears to have been excessive speed, just before reaching the bridge, causing the tender to rock.

The train derailed near West Point, Va., on the 3rd, was a westbound freight consisting of seventeen cars, with a passenger car at the rear. The derailment occurred on the trestle approach to a drawbridge and the engine, the tender and three freight cars fell 30 ft. to the river below. A track foreman was killed and the engineman and two firemen were injured.

The train derailed near Genoa, Wis., on the 4th, was a southbound passenger, and the engineman was fatally injured. Six other employees were slightly injured. The cause of the derailment was a large boulder, which had fallen on the track from a high bluff, having been dislodged by rain.

The train derailed near Fairview, N. Y., on the evening of the 9th, was a work train, and the obstruction that threw the engine off the track was a large tree which had been blown down. The engineman, fireman and one brakeman were killed.

The train derailed near Clayton, Ala., on the 13th, was a northbound passenger crowded with excursionists. The three rear coaches fell down a bank. The cause (reported in the *Railway Age Gazette* of November 21) appears to have been defective track combined with excessive speed.

The train derailed on the Pennsylvania near Wooster, Ohio, on the 13th, was eastbound passenger No. 52. The engine and tender were ditched and two cars were thrown crosswise of the tracks. At the moment the derailment occurred a westbound freight train came along and was partly wrecked by striking the wreckage of No. 52. Three persons were killed; one passenger, who was in the express car, where he had gone to look at a pony, which was in that car and which was his property; one brakeman of the freight, who was struck by flying debris when his train was derailed, and one lineman of the road, who had jumped off the passenger train and was struck by the approaching freight train. Three employees were slightly injured.

The southbound "Royal Palm" limited express was derailed at Annadel, Tenn., on the 14th, and the engine and two cars were overturned. The fireman was killed. The engineman escaped with slight injuries, and all of the occupants of the cars were equally fortunate, the cars being of steel. The cause of the derailment was not determined, but is believed to have been excessive speed on a descending grade.

The train derailed near Cordova, Ala., on the 18th, was a westbound express of the Illinois Central. The engine was derailed on a curve and was overturned. The engineman was fatally scalded and one baggage man and two mail clerks were injured. The mail car and baggage car fell part way down the bank.

The derailment near Shiloh, Ohio, on the 24th, was caused by the explosion of the boiler of the locomotive. The engine and three cars were wrecked and the road was blocked about six

hours. The engineman, fireman and one brakeman were injured.

The train derailed near Central City, Col., on the 30th, was a northbound passenger, and the engine was overturned. The accident occurred on a switchback, at low speed, and the cause could not be determined. The engineman was fatally scalded.

Electric Car Accidents.—Of the three serious accidents on electric roads reported in the month of November, only one—a derailment, reported from Pittsburgh, Pa., on the 8th—is charged with fatal results. In this case the car ran away on a steep grade and the motorman was killed. Eighteen persons were injured.

Canada.—In a derailment at a switch on the Canadian Pacific at Moose Jaw, Sask., November 3, one passenger was killed and eight were injured. Near Caldwell, Ont., on the 21st, the first section of the Imperial Limited of the Canadian Pacific, west-bound, was derailed, and the fireman was drowned.

REPORT OF NEW JERSEY COMMISSIONERS

The Board of Public Utility Commissioners of New Jersey, R. W. E. Donges, Thomas J. Hillery and W. M. Daniels, in their annual report, which has just been sent to the governor, recommend that the law empowering the commission to approve proposed issues of securities be amended, so that the applicants shall be required to show that adequate efforts have been made to get the best possible price for stocks or bonds; or, in default of this proof, to require that sealed competitive bids shall be called for. Other modifications of this law are also recommended. The commission desires to have the law for the elimination of grade crossings made more specific and detailed, and calls for an amendment of section 70 of the general railroad act, regulating the bonded debts of railroads; also an amendment to more clearly prescribe the conditions under which leases of railroad property may be made. The report contains an account of a number of important decisions in which the courts of the state have during the past year sustained the action of the commission.

The law authorizing the commission to take action looking to the elimination of grade crossings has occupied a considerable share of the commission's attention during the past year. More than 2,500 crossings have been inspected and the records relative to them brought up to date in satisfactory form.

The refusal of the board to approve a lease of the West Jersey & Seashore to the Pennsylvania for 999 years, has been made the subject of a suit by the road, and this is now pending in court.

A NEW RAILROAD CONNECTION WITH JERUSALEM.—At the present time the greater part of the commerce to the region around Jerusalem passes through Jaffa. This port is a very inferior one and only small coasting vessels can penetrate within the belt of dangerous rocks that encircles it. Large steamers and other ships have to remain in the open sea a mile or two from shore and have their passengers and merchandise landed in large surf boats. Sometimes in bad weather even this is impossible, and during winter there are periods of a week at a time when no connection at all can be made with the main land. Some time ago it was planned to establish a new port at Jaffa. It is only recently, however, that offers were made to obtain the concession. A French company, the Jaffa-Jerusalem Company, now expects to commence operations next summer. The work on the harbor will cost about \$5,000,000. There is also a railway concession. A new line will be built from Rayak, on the Beirut-Damascus line to Lydda, on the Jaffa-Jerusalem line. This line will develop the rich plains of Esdraelon and Sharon, and it will be possible to journey from Jerusalem to Constantinople by railway via the Aleppo branch of the Baghdad line. Jerusalem's position will thus be greatly improved.

Development of Young Men in Railroad Work

A Vital Need to Which Attention was Forcefully Directed at the New England Railroad Club Meeting

BY GEORGE M. BASFORD.

When asked to present this subject on this occasion I hesitated because to treat it in the right way puts me in the already too numerous class of critics of railroads. I decided to decline. Then it was urged upon me as a duty to help the railroads by telling the truth as I see it. With a sincere desire to show the way out of a great difficulty these observations are offered. They are offered to all the railroads of the country and not specially to those in this section. They are equally applicable to commercial and manufacturing organizations which have grown rapidly to large size and have, like railroads, neglected to provide the men of the future.

A fine orchestra is one of the best examples of successful organization. Each individual member has perfected himself in one particular part. His entire effort in life is devoted to the skillful performance of his own instrument so that it will take its place with all the others at precisely the right time, with exactly correct pitch, volume and expression. Every individual member is an artist, a master, and with his instrument he constitutes a perfect unit. Each unit is a necessary part of the whole. The omission of a single one would be detected by a competent critic. The work of such an organization is perfection itself. No one makes a mistake. Every sound goes with and into every other sound. Nothing is superfluous. There is no waste, no lost motion, no inefficiency. There is no dominant instrument. None stands out in relief against the rest. All blend into perfect music under the direction of the leader, whose slightest wish is instantly interpreted by every member. The leader is a part of every individual and every individual is a part of the leader. This is ideal organization.

This perfection of performance is not accidental; it is the result of unremitting training, first individual and then collective. It is worth while asking what railroad organizations may learn from the orchestra. Railroads may learn from the orchestra the meaning and the importance of this word "training." If some years of study of the personnel of railroads has guided my thought correctly, railroads will find themselves unable properly to cope with their problems if they do not seriously and consistently inaugurate systems of training.

My subject is the "Development of young men for railroad service." To this should be added the same words in reverse order—"Development of railroad service for young men." I desire to present these two principles. If the best people of any kind are wanted anywhere the surroundings must be made attractive and kept so. Ask yourselves what are the inducements for your son to go into railroad service. Do you wish him to go into it? Are you doing what you may to make it attractive for him? Are you doing the right thing by the young men you now have in service? If you were to start over again, as a young man would you take up railroad work? These are pertinent questions, all of which will be readily and satisfactorily answered when the complete significance of the word training is understood and its principle is grasped and acted upon by the managements of railroads.

It is impossible to understand how the railroads of this country could have shamefully neglected apprenticeship as they have done. This is the industrial equivalent of ceasing to propagate the human race, and leaving the earth to beasts and vegetation. It will leave the mechanical trades to those who have been properly called "wreckers and rag-time mechanics." You are paying a ruinous price for this neglect today, and with worse to come if you do not wake up to the situation facing you. The few roads which are alive to it are like the taper light you

carry in the Roman catacombs which makes the darkness the more impressive. What is a paltry group of twenty-five hundred boys provided with modern apprenticeship among seventeen hundred thousand men on our railroads! And yet you all take apprentices and solemnly swear that you will faithfully teach them the trades of your shops. You do not do it. You are actually dishonest with the boys. You do not even provide means of selecting them or of ascertaining whether or not they are adapted to the work you have undertaken to teach them. When they have served their time, if you give them full mechanics' wages you do it too late or too grudgingly and you promptly and properly lose the boys. The management then concludes that apprenticeship is a failure and it lapses into a dead letter. Not until self-preservation compels you will you give to the training of youth its proper place. Take warning. This point has been reached.

In most of the departments of the railroads there is no systematic recruiting whatever. It is not too much to say that the situation of the railroads today would be almost a happy one if the young recruits of all departments had been carefully selected and consistently trained as they ought to have been during the generation that is now about to hand its responsibilities to that which is to follow. What sort of a legacy is it handing down? It would be well for railroad managements to see whither they are tending, for this is a question for managements to decide. Materials, methods and engineering receive incessant attention, while the recruiting and training of men are all but forgotten.

What training does the shop man receive today? What do the fireman, the engineer, the roundhouse man, the despatcher, the yard man, the clerk and all the rest receive? I recently asked a railroad official how, in the absence of apprenticeship, he trained machinists. He replied—"We make them overnight from anything with two hands that comes along." It is no wonder that difficulty is found to put up a crosshead fit for a piston rod properly, or even to take one down without injuring it. It is no wonder that our locomotives carry around tons of unnecessary weight, because it is impossible for the shops to take advantage of the best engineering design. Is it possible for this railroad official to make mechanics overnight to take the places of his best men who have gone to the automobile industry? It is not and he knows it.

Every department is suffering because of neglect of this problem. A few years ago everything was small, trains were light and traffic thin, rates were reasonable and there was no such tension as exists now that transportation has become a business. To show what has happened let me refer to the fact that a locomotive, soon to be built, will exert a tractive effort of 160,000 lbs., and will weigh 820,000 lbs. This great power in one unit presents great problems. Large units of power are more difficult to use efficiently than were their smaller predecessors. It is more difficult to make them earn the proper rate upon the capital invested. The closest possible approximation to continuous service is absolutely necessary. Terminal service at the roundhouse and the shop must be accelerated. Despatching now assumes an importance that it never had before and that few people give it today. In spite of all this every department is neglecting the training of the men who are dealing with these problems.

No matter how efficient or how well managed the mechanical department may be, no matter how well designed or how well

maintained your locomotives are—the power must be used to best advantage and herein lies the field of most promise for effective training. Why not make common cause of a common problem in all departments and work it out together? Here is the greatest possible opportunity for co-operation, for a getting together, for co-ordination of effort.

Efficiency experts have criticized mechanical departments severely, but they have not even aimed at the operation of the units of power. They ask the mechanical department to account for every minute a locomotive is in its hands. It is proper to do so. But they never ask the despatcher to account for the use he makes of the potential capacity of every locomotive while in the hands of the operating department. Despatchers might be trained to figure out the tractive power hours available for every engine and to know the cost of every hour, whether moving or on sidings. If they were required to explain their use of every hour as the mechanical department is obliged to do, the two departments would understand each other better and would be brought into closer co-operation.

Mechanical and operating officials have everything in common as a problem. Each knows much that the other needs to know. They are too far apart. I believe they may be brought together through training which will produce railroad men and not department men. What a field does the railroad present for progressive advancement and for a study of men to assure absolute certainty of advancing the men most capable of dealing with greater responsibilities! But the promotion is not properly balanced. Who ever looks to the motive power department today for a division superintendent, a general superintendent, a purchasing officer or a general manager? The few exceptions on record simply prove the rule. Why should a mechanical department position disqualify a good man for promotion? But it does.

If recruits had been trained in past years these conditions would not now exist. If railroads had established real apprenticeship twenty years ago the motive power department would now be the source of many of the best high officials of every road as it ought to be. This department is overlooked today and largely because of its own fault. The department has not asserted itself and it has neglected its recruiting system. If you had trained boys in the shops some of them would have become firemen, then engineers, then trainmasters, then division superintendents and from there an occasional one would have gone to the very top of the organization as president. This would have left plenty of room for other lines of advancement from train and station service. What has happened? The door is closed against the motive power department. But, thank God, it may yet be opened again. If this department does not heave the anchor of apprenticeship it will soon be on the rocks to stay.

This is the department that brings in the money, because the locomotive earns every dollar that comes into the treasury. Furthermore, if your power is always ready for 100 per cent service, the rest of the operating problem is relatively easy. It must also be admitted that roundhouse, shop and locomotive service offer opportunities to prepare most thoroughly and most admirably for operating responsibilities. It seems fair to assume that an operating officer who first thoroughly understands the possibilities and the limitations of locomotive service and then acquires operating experience will have certain advantages over an operating officer who has grown up only in the operating line from the telegraph key or from train or yard service. To illustrate—a general superintendent who had sometime been a roundhouse foreman would fully understand what it means and what it costs for a despatcher to hold locomotives in the yard, sending them to the ash pit and roundhouse in bunches when he could send them directly from their trains and one at a time. An operating officer who had fired a locomotive would not permit of locating a side track switch or a water tank at the foot of a grade. If despatchers, or the men they report to, knew from experience what a locomotive can

properly be called upon to do they would hesitate to put two or three too many cars on trains, overloading the power to the detriment of the service; yet there would be as many cars as the engine ought to haul. A lazy engineer or fireman could not deceive a division superintendent who had first hand knowledge as to what service may properly be expected.

I contend that the efficient service of a master mechanic should be considered as the basis for promotion not only inside but outside of the department. In other fields a man who can maintain and operate 200 locomotives making 2,000 turntable movements every week and do this with but 1 per cent of engine failures in winter storms, would be recognized and rewarded. He has 200 individual complete power plants on wheels and scattered, to care for and keep in perfect condition. These 200 locomotives represent perhaps \$4,000,000 invested, not to mention investment in shops, coaling stations and roundhouses, and they aggregate 300,000 h. p., which is a greater aggregation of power than is concentrated in the New York Edison Waterside electric power station in New York City, the largest power plant in the world, and yet this master mechanic is likely to receive less compensation than a locomotive engineer who has a favorable run and, furthermore, he is not sufficiently encouraged by the prospect of promotion. The development of men for railroad service would be much easier if this man could be so encouraged, because it would render mechanical positions more attractive. It would cost the railroads and the public nothing to open the door for these men. A little prospect for advancement would go a long way to lead them to overlook deficiency in compensation, if compensation may not be increased.

Consider how roundhouse foremanship is misunderstood, how it is misused. Too little consideration is given to this important official, yet if he is a good one and can keep his locomotives moving under adverse conditions, for example in cold weather, he must necessarily exercise qualities of the character that make a general manager. If there is a position on the road that ought to be considered as a stepping stone to a better one it is that of the roundhouse foreman. Ask yourselves whether you would like to be a roundhouse foreman under conditions prevailing on most railroads today, with machinery, men and facilities lacking. Ask yourselves the reason. If you have ever seen a motive power officer promoted to the position of general manager you have seen roundhouses built and equipped so that men could do efficient work in them with money made thereby and you have seen good roundhouse foremen promoted. You have also seen these men give a good account of themselves. The roundhouse foreman can never have his job sweetened enough to be comfortable because of its inherent hardships, but if effective service should be recognized as a basis for promotion and the roundhouse made a stepping stone in a system of training for something better, an important part of this paper need not be written. Training must not stop with so called young men. Training, as I see it, involves the use of one position as preparation for a better one, and therefore should be an established principle in promotion.

We often hear how difficult it is to find foremen of high quality for various shops. Apprenticeship is the remedy, but not until foremanship is understood, not until the foreman is paid at least as much as an active pieceworker in the shop. Foremanship does not attract the best shop men today.

Much complaint is heard of the difficulty in securing good firemen. Whom do you try to secure and who selects them? It was surprising to hear a railroad official make this statement before the Western Railroad Club recently: "It is too bad that in some cases men have been hired as firemen by the clerk of the road foreman. In other words, a man untrained has been permitted to select the man on whom you must depend to pull your fast trains 15 or 20 years hence." Of course this is exceptional, but that it ever occurs is important in this discussion.

An occasional strong, ambitious lad who had served his ap-

prenticeship in the shop, would seem to be the very best candidate for this service. You would have known him for several years. The pay would attract him and he would take up the work with thorough knowledge of the locomotive which few young firemen now possess. An apprenticeship for firemen, however, is needed to take care of the other recruits for this service because comparatively few could be had from the shop boys. It is easy to imagine that a shop apprentice who becomes a fireman and then an engineman might reveal executive ability justifying his promotion to the position of traveling engineer or roundhouse foreman—but can he afford to be promoted after running an engine? We therefore see that progress here is blocked as it is for shop men as to foremanship. No one can doubt that here is something to be changed before improved methods of recruiting and training will be effective.

To return for a moment to the shop and directly to apprenticeship, ask yourselves where the boiler maker foremen and the boiler makers of the future are to be had. How many real boiler makers are you training? Boiler work constitutes the larger part of locomotive repair expense, and yet who has any boiler shop apprentices? Even the roads having the best apprenticeship schemes have very few of them. What are you doing about this to attract boys of the right sort to this vitally important trade? The right sort of boys will not take their chances in a boiler shop today. You yourselves would not. For the best of reasons you would not willingly allow your sons to do so. Look to this quickly. I warn you.

Then look a moment at the office clerks. Poorly paid armies of clerks might perhaps be replaced by a smaller number of better paid ones if they were trained in their work, but who ever seriously considered the training of clerks? This field offers an opportunity that is going to waste.

Someone asks what apprenticeship should be. The apprentice problem is very simple. For the shop it should be the old time apprenticeship brought down to date, changed and improved to meet present conditions. Several essentials must be provided.

First is the training of the hand, eye and judgment in the shop by men who have no other duties. The course should be short, active and thorough to render the boys good, quick, accurate and intelligent workmen, and good citizens, in the shortest possible time. Three years of intensive training is sufficient for the course itself. The shop training must replace the "master" of the past by a bright shop instructor who will personally teach the processes of the trade he himself commands and who will see to it that the boys of other trades are properly and consistently taught by competent men and methods. The boys must be taught direct and correct methods and they must understand the value of time and material. This part of the subject merits a paper by itself.

Second is mental training coincident with the manual development. This means night schools or day schools conducted by men who understand the shops and who can show the boys how to educate themselves. These schools are to unfold the reasons for everything done in the shop and to lead the boys to look back at preceding processes and ahead to the processes which are to follow and to enable them to understand the materials, processes and forces with which they are dealing and to conduct their work without waste of energy, of time, or of material. Few men in the shop think of the cost of the work they do. If they did they would effect great savings. This is an important part of the school work. Boys in a year may know many things that their foreman required many years to learn and which some foremen have never learned. For instance, our boiler shop apprentice will know how to design boiler seams. I know of a capable foreman who recently reduced the strength of a joint below safe limits believing that by putting in a surplus of rivets he had made a strong repair job.

Third and most important is the personal responsibility over the boys centering in one man, the apprentice supervisor, whose duty is to know and understand them. He must know the boys

intimately, thoroughly understanding their capabilities and their personalities. He must know them better than parents usually know their boys and be able to guide them in all the affairs of young manhood. He must know them well enough to guide them into the right work, and he must have natural ability as an educator so that he can deal with each personality in accordance with its peculiar needs and its own peculiar possibilities. This man must know the essentials of the makeup of a machinist, boiler maker, pipe fitter, millwright, pattern maker, carpenter, fireman, clerk and all the rest. With this knowledge and with great care he must help the boys select their work and guide them in such changes as may be necessary. He must be able to adjust misfits which are sure to be found and must interest all the foremen in the boys. He must also be a man of high moral character, one with a personality that will enable him to influence the boys and lead them to be honorable, upright men. He must have that enthusiasm that makes work of any kind successful. He must reveal to the lads their duty to themselves and to the country. A good citizen is likely to be a good workman, and a good workman is likely to be a good citizen. You will say that these specifications are very severe and that it is difficult to find such men. The answer is that the fact that it is so difficult to find such men in itself reveals the weakness of present methods and the need for an awakening. The man who can do such work properly and who can exert this influence continuously will prove to be one of the most important subordinate officials of the whole railroad organization. A few such men are available and more are coming along.

An objector says: "We can't afford to play into the hands of the unions. Our apprentices joined the unions and we fired them." Life is too short to answer this except to ask whether anybody is seriously attempting to improve unionism. Some are saying that the labor union agreements limit the number of apprentices. The answer is that the railroads should not raise this question until they have made proper provision for the number that the agreements allow. The quickest way to increase the allowance is for a labor leader to discover that his son can not be apprenticed because the ranks are full up to the limit he himself has helped to fix. Some one else is saying that it is difficult to secure boys of the right sort in sufficient numbers. This is completely answered by the roads which have taken this subject up with serious intent. There is no trouble to find the boys. Some one will add that the red tape surrounding the employment of minors is so irksome that they cannot afford to put up with it. You will be held to account if you allow this to stop you. Another will say that small shops can not properly provide for apprentices and that poor roads can not afford apprenticeship. Both objections are absolutely silly, as has been proven by experience. You can not introduce anything in any shop or any department that will pay as big or as quick returns as will apprenticeship when it has the force of the management back of it. After the first year the boys pay back to you all you spend on their education or your system is at fault. Let me say again that failure to provide apprenticeship is not to be excused on any ground whatever.

Is your organization qualified to receive and retain apprentices when through their time? If not, as I have endeavored to show, you have a great work to do before you begin to talk about training young men for railroad service. Do you encourage capable young men and do you have automatic means whereby able men will reveal their qualifications for promotion? Do you promote men and thereby encourage your subordinates or do you import strangers when you have good places to fill? If you can not answer these questions look up the plan for studying and recording the characteristics of men, which was so successfully introduced on the Lake Shore & Michigan Southern Railway (see *American Engineer*, December, 1908) about five years ago by Mr. L. G. Parish. Does your president give it out as a basic principle of organization that every officer on the road must train and otherwise educate his own suc-

cessor? Progressive promotion presents a problem, but until it is solved or partially solved it is fruitless to consider recruiting systems. The best possible recruiting and training methods will fail if recruits, however well trained, are brought up against continual discouragement.

Your office is not what it should be, neither is your shop or your drawing room if it leads to blind alleys from which there is no promotion and no outlook. You must find outlets, or the equivalent, for capable men in every department. If not outlets then you must find ways in which able men may so improve their work that they will not cease to grow, expand and become more able, more valuable to the company and to themselves. Railroads and industrial concerns are not thinking of this today!

It is high time the truth were told concerning the railroad motive power situation in this connection. I hope to live to see the day when railroads will offer the attraction of happy conditions to induce good, strong, capable mechanical men to be willing to spend their lives in preparation for leading positions in this department. I know many railroad officials. I know very few heads of mechanical departments who are happy in their work, happy because their problems and conditions are understood and appreciated, and because they see anything but trouble ahead of them. One of the very best of them is about to quit because he is not understood by his superiors. Of course he ought to make himself understood as a railroad officer and he is to blame to a large extent because of taking too small a view of his own position. When he goes not only that road but all the roads in the country will suffer the loss of the experience, knowledge and good judgment that that man spent twenty-four years to accumulate. Where will that road look for his successor. That management will follow the usual custom and seek a man who will be a stranger to the management, the men and to the conditions of the road.

This motive power officer told me that he was sick of being considered as a necessary evil. He was tired of unintelligent "rawhiding." He was tired of trying to educate the chief clerk of his superior officer in locomotive matters. He told me he had written the equivalent of a library of books constituting a liberal education in locomotive design, maintenance and operation in answer to the proverbial "Please explain" letters of this chief clerk. He was tired of having the management ignore him and of having questions involving his department decided by men who did not understand the department and who would not take the trouble to consult him. Do you blame him? There are many others who feel as he does.

The man does not need your sympathy. A vice-president's title and salary in a big concern are waiting for him. Pity the railroads that they should lose such men when they are in the prime of knowledge, ability and experience, and from the department where these qualities are today so vital. I do not believe that those who own and operate our railroads understand what has happened and what is happening to many of their mechanical departments. It takes ten thousand boys to make a mechanical superintendent. See to it that you do not lose such a man off the top without proper provision for taking in good recruits at the bottom. You have no such provision today.

We must take a leaf from the book of English roads. English motive power men do not quit as ours do to double their salaries in the service of industrial concerns, in positions where they are not worried to death by troubles that they know how to prevent, but are not allowed to guard against. On the larger English roads the chief mechanical officers receive salaries approximately twice as large as the largest in this country. On some English roads the chief mechanical superintendents deal not with officers who do not understand them and their problems, but with committees of the directors of the roads. No wonder those mechanical officials remain in the service until relieved upon retirement. No wonder subordinate officials are willing to spend their lives hoping to succeed to such positions.

Today the locomotive and its operation offer greater possibilities for improvement in net earnings than ever before in the history of railroads. Today the locomotive presents problems as well as possibilities requiring knowledge, experience and good judgment that were never required before. Today is the day for improvements in the use of fuel, for fuel saving devices and capacity increasing factors in locomotive design, for improvement in service and for improvement in equipment and methods for maintenance, and for the training of the men of the future. Will the railroads measure up to their opportunity? Will they? An entire evening would be required to tell of the accomplishments in improving locomotive service in spite of unfavorable conditions. What would the results have been with favorable conditions?

Apprenticeship has made good where it has had half a chance, and it has had a chance on a few progressive railroads. It is not a failure. Its value is established beyond a question. The only failure has been a lack of backing. The only trouble has been in educating the managements to what they ought themselves to know to be their duty. It is fruitless to start apprenticeship unless the very head of the organization plants himself squarely for it, insisting that every one get in line and stay there. If he does this no subordinate will dare ignore it, simply because he is looking only for the things of today. The world will not long excuse neglect of apprenticeship and that which goes with it, and this applies to every department.

A great weight must be taken off the mechanical department from within and from without. Because years will be required to accomplish this there is no time to be lost.

These arguments are supported by proof that the underlying thought of this appeal is possible of accomplishment. The United States navy has proved it in its personnel plan whereby line officers are compelled by education and experience to know first hand and to understand their motive power problems. Some of our railroads will soon prove the rest of my argument if they persist in their uphill fight for real recruiting and real apprenticeship.

Not until railroads provide proper methods of recruiting for all departments and not until adequate methods of training these recruits and not then until the organizations are prepared to receive and properly provide for retaining competent, able and ambitious young men, will the railroads begin to climb out of the personnel difficulties in which they are now submerged. What can the managements of our railroads be thinking of to overlook this situation and this opportunity? When will they wake up?

If I have even in a small degree revealed their responsibilities and their opportunities my object has been attained.

Such a discussion as this must be general. I have left untouched a number of phases of the problem. I am prepared to offer a constructive program to any railroad management desiring to consider it.

DISCUSSION.

F. W. Thomas, supervisor of apprentices of the Atchison, Topeka & Santa, sent a communication in which he said in part: I sincerely wish it were possible to be present to tell you what the ideas promulgated by Mr. Basford in this paper have already done in practice on the Atchison, Topeka & Santa Fe. While authority was given us nearly seven years ago to experiment with the scheme for two or three years, we are quite happy in saying that it has long since passed the experimental stage and the Santa Fe would no more think of abolishing its apprentice system than it would of abolishing its power houses and tool rooms. Every opinion put forth by Mr. Basford in this paper and even more has been proven to be more than true. During this time we have filled a number of our shops with bright, aggressive, active, ambitious young men, thoroughly skilled in their trades, and 70 per cent. of all the apprentices graduated during the past seven years are still in service, and over 10 per cent. have been given some official position. While formerly we had to employ from

two to three thousand men annually to keep our shops going, it is the prediction now that within two years from this date it will not be necessary for the road to go outside to employ any skilled mechanics. This road does not consider the educating and training of the apprentices in the shop as an expense but considers it an investment.

Upon thanking our vice-president recently for the consideration he has given the training of apprentices, knowing that he was a man busily engaged all the time in large matters and large subjects, he very quickly retorted that I must not think for a moment other than that he was giving this matter consideration all the time, that while the railroad would have big problems on its hands in engineering, construction and operation, men would be the biggest problem the railroads would ever have and he felt that our present apprentice system was going a long way towards the solution of the great problem of men for our shops.

So successful has our modern apprenticeship proven that notices have been placed on all the bulletin boards of our round-houses and shops, inviting our engineers and firemen and others to visit the school rooms in search of any information on mechanical matters. When you stop to consider the section of the country traversed by the Santa Fe, especially the arid desert and mountainous sections in Colorado, New Mexico, Arizona and Eastern California, terminals located in these desert or mountain sections offer little to attract shop men, and the writer wonders what could be accomplished on the eastern roads where the terminals are in cities and towns which can offer every inducement to men to make their homes there.

Today we have all the apprentices we can possibly handle, and the scheme has been so self-advertising that we have an eighteen months' supply on our waiting list. I have written this not so much to show what this road has accomplished as to impress upon you what can be accomplished, feeling that this is only the result of the seed sown by the author of the paper tonight during the past ten years.

W. B. Russell, director of Franklin Union of Boston, and formerly assistant supervisor of apprentices of the New York Central Lines, when the work was first started on that system, said that the equipment at a railway shop plant was so varied and so complete that the apprentices enjoyed better facilities than did the students at many of the universities and colleges with their expensive shop equipments and laboratories. Not only do they have the best of equipment and materials for instruction purposes, but they have available also the very best kind of material for shop and school room instructors. Mr. Russell explained at some length the work which is being done at Franklin Union along industrial educational lines. He emphasized also the fact that the real obstacle to the installation of modern apprenticeship on railroads was not its cost or the need of equipment or instructors, but rather the failure of the managements to realize the need. To be successful the apprentices must be paid journeymen's wages at the end of their apprenticeship and should be given fair opportunities for promotion.

C. W. Cross, superintendent of apprentices of the New York Central Lines west of Buffalo, told of the progress which is being made on that system and commented on the fact that so few roads have thus far adopted modern apprenticeship methods. That other roads intended shortly to go into the matter on a large scale was indicated by the large number of inquiries about the New York Central Lines' methods which have been received within the past few months.

Henry Gardner, supervisor of apprentices of the New York Central & Hudson River, said that 84 per cent. of the apprentices graduated in 1912 and 86 per cent. of those graduated in 1913 had been given journeymen's rates and had remained in service. About 50 per cent. of all the apprentices which entered the course graduated, which compares favorably with the conditions at most of our schools and colleges. He emphasized the necessity of paying the boys journeymen's wages immediately upon the completion of their apprenticeship, and also directed personal attention to the fact that no apprentice system could be a real success unless the instructors were alive to the responsi-

bility of giving moral training as well as physical and mental.

Roy V. Wright, of the *Railway Age Gazette*, directed attention to the fact that when modern apprenticeship methods were first proposed and installed it was not expected that there would be any immediate return, but that the money expended would be in the form of an investment which would begin to give a good return at the end of a period of ten years or more. Results on both the New York Central Lines and the Atchison, Topeka & Santa Fe indicate that the returns are almost immediate. This is due to three things. In the first place, the modern apprenticeship methods insure a much better training and a larger number of boys are attracted by them. This means that at many shops there are waiting lists and it is possible to select a better grade of boys than under former conditions. In the second place, the boys progress very rapidly under the direction of the shop instructor, and the quality as well as the quantity of their output is greatly improved as compared with the shop which does not employ a shop apprentice instructor. In the third place, the instruction in the school room broadens the boy and stimulates his interest in the practical work in the shop.

An up-to-date farmer watches closely each one of the cows in a herd to make sure that it is giving a proper return on the investment. If it falls below this it is sent to the butcher. If the farmer is justified in studying the characteristics of each one of his animals and keeping a close check on their output, is it not far more important for railway managements to watch each one of their employees as closely, or even more so, than the farmer does his cattle? The returns from an indifferent, poorly trained worker as compared with one who has been assigned to that class of work for which he is best fitted and has been given a good training would surely amount to a large enough sum to warrant some considerable pains being taken to secure the latter sort of men.

A. W. Alexander, of the General Electric Company, who has done such splendid work in training the apprentices at Lynn, Mass., spoke of the variety and complexity of the characteristics of men as compared with that of material, and emphasized the greater need of giving relatively at least as much attention to the men as to the material and the design. He explained fully the work which had been done at Lynn and showed that the expenditure for this work was more than offset by the direct returns from the better training. An indirect return, which is of even greater value, is that of increased loyalty on the part of not only the boys who receive the training, but of the entire organization.

W. J. Cunningham, of Harvard University, emphasized the fact that the men in the operating, engineering and other departments were laboring under just as serious handicaps as the mechanical department men. In reply to Mr. Basford's criticism that opportunities were not open for the mechanical department officers to be promoted to other departments, he stated that one of the most recent appointments on the Boston & Albany was that of a road foreman of engines who had been made a trainmaster, and also that one of the latest appointments on the New Haven was that of a superintendent who had been promoted from an assistant superintendent of motive power. While it is true that the salaries of railroad officers are not as large as they might be, still the variety of the work is such that men are attracted by it, and this offsets somewhat the difference between the salaries which the industrial concerns and railroads pay. He felt also that Mr. Basford had possibly taken too gloomy a view of the situation in the mechanical department.

J. A. Droege, general superintendent of the New Haven, spoke on the needs of the operating department, and W. B. Leach, of the Hunt-Spiller Manufacturing Corporation, and Charles E. Lee, of the Commercial Acetylene Railway Light & Signal Company, discussed the paper from the standpoint of the manufacturing concerns as well as the railroads. F. W. Brazier, superintendent of rolling stock of the New York Central, sent a communication on needs of the car department and the importance of its being given greater consideration in the railroad department organization.

AN INTERESTING APPORTIONMENT OF EXPENSES TO SUBURBAN TRAFFIC

An interesting segregation of expenses as between suburban traffic and through traffic passing over the same rails has recently been made by the Southern Pacific in connection with a case before the Railroad Commission of California, involving a proposed reduction of fares for its electric suburban service in Alameda county. The case also brought out some interesting evidence bearing on the question of the profitability of suburban business, as the company undertook to show in statements presented by C. W. Durbrow, its attorney, that on the 877 suburban trains operated daily out of the Oakland and Alameda moles, in connection with the trans-bay ferry service, carrying nearly 14,000,000 passengers per year, the loss for the fiscal year ending June 30, 1913, approximated \$364,000, without taking into consideration interest on the investment, the valuation on which was placed at \$46,209,560.

The case was instituted by the residents of one of the suburban communities who filed a complaint for the purpose of compelling the Southern Pacific to apply a uniform one-way rate of 10 cents to Stonehurst, which is 14.3 miles from San Francisco. The charge was made that the existing one-way rate of 15 cents and the commutation rate of \$5.00 per month were unreasonably high, and discriminatory in comparison with the uniform one-way rate of 10 cents, and the \$3.00 monthly commutation rate charged to other points, for instance, to Melrose, on the same line, 10.8 miles from San Francisco.

The case naturally divided itself into two main branches, first, as to whether the rates were unreasonably high, and second, as to whether the rates were discriminatory. In justification of the reasonableness of the rates per se. comparative tables were introduced to show that the suburban rates out of San Francisco to Alameda county points are the lowest in the United States, and are much lower than the rates applying in and about New York, Philadelphia, Boston, Chicago, St. Louis, New Orleans, Los Angeles, Portland, Seattle and other cities, while in many instances the density of traffic in and about those cities is much greater than that out of San Francisco. Railway operating officials testified that the operating conditions were more onerous in San Francisco than in the east, and that the expenses were greater. In this connection tables were introduced showing that the expenses of conducting this suburban business exceeded the revenue derived therefrom by \$363,982.80 per annum, based on the actual figures for the 10 months, July 1, 1912, to April 30, 1913. One of the exhibits gave in detail the division of these expenses, which are summarized as follows:

REVENUES—RAIL AND WATER LINES.	
Passenger	\$1,359,636.12
EXPENSES—RAIL AND WATER LINES.	
Maintenance of way and structures.....	\$190,349.52
Maintenance of equipment	130,937.88
Traffic expenses	719,900.52
Transportation expenses	18,974.52
General expenses	609,071.04
Maintenance and operation of vessels, etc.....	54,385.44
Taxes	\$1,723,618.92
Deficit	\$363,982.80

In this instance the accounts had been kept in such a manner as to enable the company to make a thoroughgoing division of the expense of conducting local passenger business. The manner in which the apportionments were made was shown graphically in a statement filed with the commission. Practically all of the segregations were based on the actual expenditures, with the exception of the ferry expenses. The number of the passengers who traveled on these boats in suburban and main line service was determined, and it was found that 90.3 per cent. of all passengers traveled between suburban points, the number of main line passengers being 1,462,321 for the fiscal year ending June 30, 1913, and the number of suburban passengers being 13,611,099. Under the ruling of the United States Supreme Court in the Minnesota rate case it was felt that the

expense of conducting this business must be apportioned in accordance with the value of the use to which the facilities were put, and, therefore, 90.3 per cent. of the expense of the ferry service was apportioned to the suburban business.

In determining what proportion of the railway operating expense was properly chargeable to suburban business the engineering, auditing, operating and traffic departments were instructed to eliminate from consideration all items of expense which were common to main line and suburban business. For instance, a large passenger depot at the Sixteenth street station, Oakland, accommodates both main line and suburban trains. The expense of operating this depot was entirely eliminated, and its valuation was also left out of consideration in a valuation of the property used in suburban business, which was also made in connection with the case. In general, where facilities are used jointly in the two services the expense thereof was entirely eliminated.

The memorandum of the method and bases used for arriving at the expense properly chargeable to suburban service which was filed with the commission describes in detail the methods or bases of division used for each class of expenditures under the accounts of maintenance of way and structures, maintenance of equipment, transportation expenses, general expenses and maintenance and operation of vessels. Of 108 accounts included under these various heads, 72 could be divided on the basis of the absolute actual expenditures. In the accounts on which the division could not be so made some of the principal variations in method were as follows:

Roadway tools and supplies.—Based on actual expense, according to section location, except sections consisting of both suburban and other tracks, which were apportioned on the basis of relative miles of track for territory involved. Sections containing tracks used both for suburban and other service were apportioned on the basis of number of passenger cars handled.

Bridges, trestles and culverts.—Based on actual expense, except that wages and expenses of bridge inspector were based on road mileage.

Roadway buildings.—If used by both through line and suburban, basis, cars handled.

Station buildings and appurtenances.—Basis, cars handled.

Docks and wharves.—At Alameda mole, actual cost; at Oakland pier, basis, passenger cars handled.

Steam locomotive repairs.—Actual repairs to individual locomotives; running repairs basis current month's mileage; shop repairs basis of mileage made since in shop for the same or heavier class of repairs; accident repairs according to location or responsibility.

Water for road locomotives (steam suburban service).—Estimate furnished by mechanical department.

Lubricants for road locomotives.—Cost per mile for road locomotives applied to mileage of locomotives in suburban service.

Agents, clerks and attendants.—Relative service furnished each class of service where possible, otherwise basis of cars in and out of station.

Labor at stations.—In joint service, basis, cars handled.

Stations, heating and lighting.—In joint service, basis, cars handled.

Interlockers and block and other signal operations.—Junction points, based on number of functions serving each class of service.

Crossing flagmen and gatemen.—Actual, except junction points based on number of cars handled.

Depreciation of vessels.—Actual charge to individual vessels. Original cost less estimated salvage divided by entire estimated life.

Incidentals in ferry service.—Based on mileage of boats served.

Damage to boats owned by another company.—Actual, according to boat doing the damage.

Repairs to passenger wharves and slips.—Actual at Alameda mole; at Oakland pier, basis of passenger cars handled (65 per cent.).

Rental.—Basis, passenger cars handled. Items assignable to through service excluded.

Under the showing made, of an actual deficit in the operation of suburban service, it was unnecessary to show the value of the plant devoted to the suburban business, but it was considered advisable to do so in order that the commission might be fully informed, and in order that it might determine what rates the company would be entitled to receive if allowed a reasonable return upon the investment. The value of the entire suburban system was shown with great detail as determined by a minute and careful survey and measurement of the entire properties, including a computation of the amount of material in all structures and roadbed, to which were applied present cost prices. The reproduction value of the properties was shown to be \$46,209,560, and voluminous exhibits were introduced to sustain it.

Heavy Improvement Work on the Erie

Important Double Tracking, Grade Revision and Realignment Between Meadville, Pa., and Corry

The Erie has vigorously pushed the work of double tracking its main line from New York to Chicago during the past three years. The section between Meadville, Pa., and Corry, which is just being completed, has involved some very heavy work, as in connection with the building of the second track, the grades and curves have been reduced so as to effect large operating economies. This portion of the line lies between the connections of the Oil City branch and the Buffalo line, so that it carries all the eastbound traffic from Chicago, Cincinnati, Cleveland, Youngstown, Oil City and intermediate points, and the

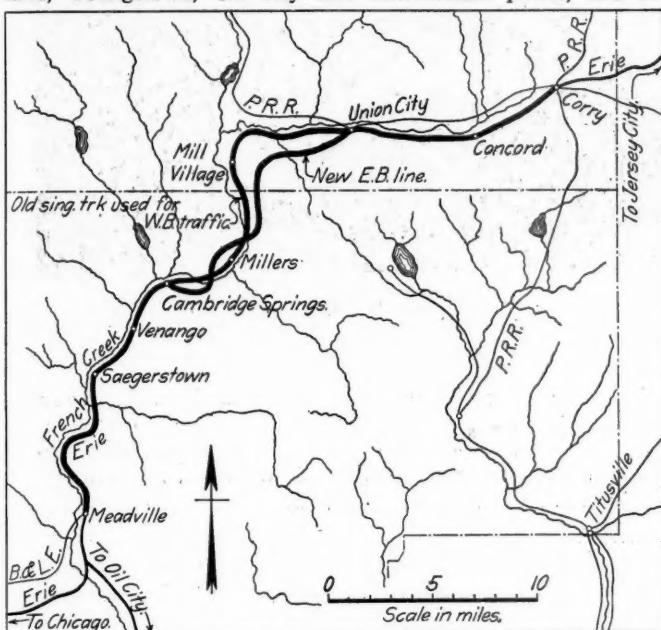
tons. The old ruling grade westbound was 0.9 per cent. and a 1,600 ton rating was in effect for westbound traffic. The old single track from Cambridge Springs to Union City was retained for the westbound traffic and will be operated with a 0.3 per cent. ruling grade, the new double track line which was built from west of Corry to Union City and from Meadville to Cambridge Springs having the same ruling grade westbound. This grade makes possible the increase of the westbound rating to 4,300 tons. The 4-deg. and 5-deg. curves in the old line have been reduced to a maximum of 3 deg., with 1 deg. 30 min. for all ordinary locations.

The average trainload eastbound on the old line was 1,244 tons, which was carried in an average of 31 cars, and westbound was 1,368 tons carried in an average of 34 cars. The average gross weight of a car was 40 tons and the car factor 5 tons, making the average rating per car 45 tons. On the new line the increased engine rating will allow the average trainload to be increased to 3,812 tons eastbound and 3,071 tons westbound, an increase over the old loading of 206.4 per cent., and 124.5 per cent. respectively. This requires 95 loaded cars per train eastbound and 77 loaded cars per train westbound, increasing the car factor to 20 tons and 15 tons for eastbound and westbound traffic, respectively, and the average rating per car to 60 tons and 55 tons, respectively.

Mikado locomotives will be used on the division of which this section is a part at an early date. This engine has a drawbar pull of 57,543 lb., and will increase the average trainload to 5,550 and 4,472 tons, respectively, east and westbound, and will permit 139 loaded cars per train eastbound and 112 cars per train westbound. The average delay between terminals on the old line was 2 hr. 34 min. for manifest and 3 hr. 53 min. for ordinary freight trains eastbound and 2 hr. for manifest and 4 hr. 35 min. for ordinary freights westbound. It is estimated that double tracking will eliminate 1,100 hours or 48 engine days of this delay per month.

LOCATION AND STANDARDS.

About 21 miles of the new eastbound line east of Cambridge Springs is built on an entirely new location, leaving the old line as much as a half mile in some places. In order to take advantage of high ground to increase the excavation on this new line and make the quantities more nearly balance, the location crosses the old single track line at two points, remaining on the opposite side for about three miles. The old location is en-

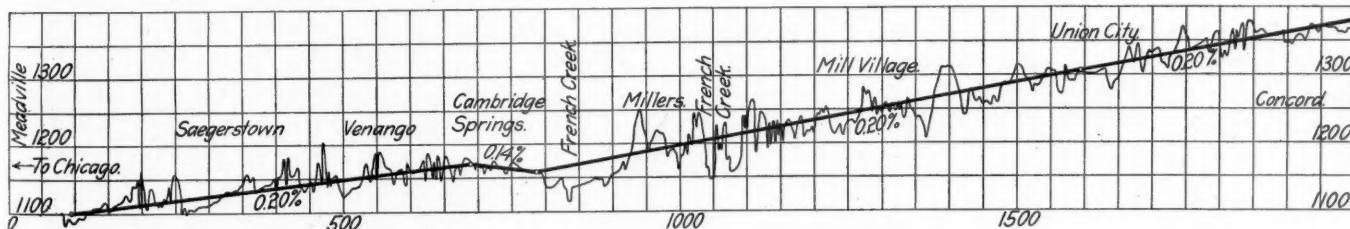


The Portion of the Erie on which Reconstruction Has Just Been Completed

westbound traffic from New York, Buffalo and intermediate points. The average traffic over this portion of the line includes 10 passenger, 3 express and 18 freight trains in 24 hours.

CHANGES IN GRADES AND TONNAGE RATINGS.

Although the length of single track between Meadville and Corry was only 33.1 miles, the improvements have covered about 36.3 miles, including the revision of grades on the existing double track east of Meadville and west of Corry to allow the



Profile of Revised Line from Meadville to Concord

entire engine district to be operated on the tonnage basis established by the grades on the new line. The locomotive in general use on this territory is a Consolidation having a total weight for engine and tender of 337,700 lb., with a tractive power of 39,649 lb. The old line had a ruling grade eastbound of 1 per cent. This grade limited the rating for the above locomotive to 1,400 tons. This grade has been reduced in the new eastbound line to 0.2 per cent., allowing the rating to be increased to 5,880

tirely in the valley of French creek, following the south bank of that stream very closely except for a distance of about four miles just east of Cambridge Springs, where it crosses to the north bank. In locating the new second track, the possibility of eliminating the two stream crossings by keeping south of the creek for the entire distance was considered, but any satisfactory location south of the creek would have lengthened the line at least three miles and the topography was not as well suited to

the desired grade line as that on the other side of the stream. The length of the new eastbound track as built is almost exactly the same as that of the old single track line.

Surveys for this improvement were begun in July, 1911, and the contractors started work in May, 1912. The 36.3-mile sec-

Company, Brookville, Pa.; the Robert Grace Contracting Company, Pittsburgh, Pa., and the T. A. Gillespie Co., New York. No classification of material or overhaul was provided for in the contracts, all prices being made from examination of the profile and test borings along the line. The grading quantities



Placing the Substructure of the Bridge to Carry the New Eastbound Line Over French Creek, the Old Single Track Line Being Retained for the Westbound Track

tion was divided in three parts, section "A" including about eight miles east of Union City; section "B" 15.4 miles between Union City and Cambridge Springs, and section "C" 12.9 miles between Cambridge Springs and Meadville. The contractors on these sections were, respectively: The Ferguson & Edmondson

reached a total of 4,523,000 yd., or an average of about 125,000 cu. yd. per mile. In general, the excavation was loam, clay and slate. Contractor's spurs were located at intervals along the old line so that the haul on construction material rarely exceeded one mile. The contractor on section "B" used a traction



Rock Cut East of Cambridge Springs, Which Contained 871,000 Cubic Yards

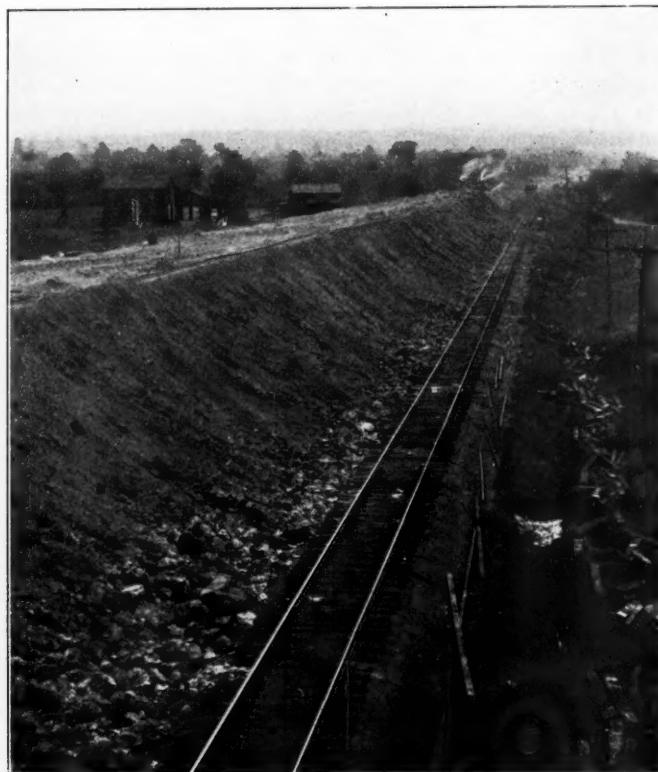
engine hauling a string of wagons for transporting some of his material. Most of the excavation was handled by steam shovels loading into side dump cars. There was practically no scraper work and only a small amount of grader work.



Side Hill Rock Cut for Second Track

The new double track fill was made 32 ft. wide with $1\frac{1}{2} : 1$ slopes, and the cuts were 40 ft. wide except when additional width was advisable for drainage or borrow. The bridges were

designed for Cooper's E-50 loading. Culverts are of cast iron pipe up to 48 in. and larger waterways are spanned by concrete structures. The minimum size of arch was 6 ft. Some I-beam slab and steel girder structures were also built over small water-



New Double Track Fill Parallel to Old Line

ways. Concrete work was, for the most part, of mass design, old rails being used in the footings in cases where some settlement might be expected. The track is laid with slag ballast,



Grading for New Double Track Line Between Old Line and French Creek

oak ties and 90-lb. A. R. A. rail. Nearly all highway grade crossings were eliminated, under crossings being of concrete arch or steel girder construction, and the overhead bridges being of steel girder construction on concrete abutments. The roadways are 24 ft. wide in general.

SECTION "A."

Very little work of unusual interest was encountered on section "A." The contract involved about 795,000 yd. of material, which was handled by three Marion 60 and one Bucyrus 70-ton steam shovels and one McMyler locomotive crane. About 110 4-yd. dump cars and 11 dinky engines were included in the contractor's equipment.

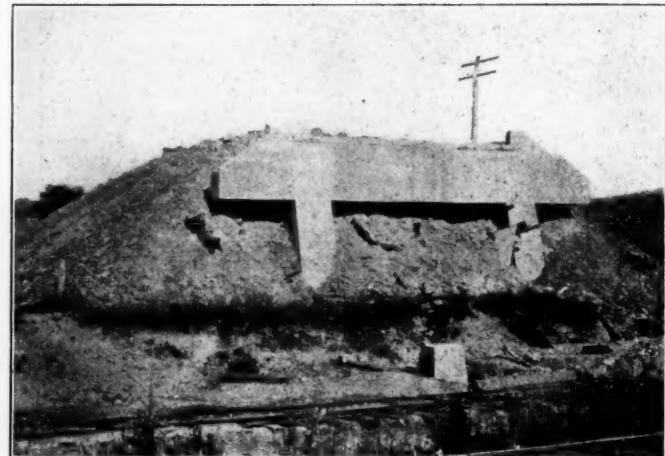
A quicksand cut was encountered just east of Union City which caused considerable difficulty. The cut was excavated 20 ft. wider than standard and ditches were dug along each side 5 ft. below subgrade. A line of 10-in. tile was laid on each of these trenches and covered with cinders so that the water from the surrounding quicksand could drain off rapidly. In addition to this, cinders were used for covering the slopes of the cut for a distance of about 600 ft. along each side of the track. This method of treatment has resulted in a dry and perfectly stable cut. The total depth of the cut was about 30 ft., the lower 20 ft. of which was through quicksand.

SECTION "B."

Most of the heavy work was in section "B" along the new eastbound line. This portion of the line from Cambridge Springs to Union City is on a continuous 0.2 per cent. grade for the entire distance, replacing a grade which was very light near Cambridge Springs and about 1.0 per cent. near Union City. The contract for section "B" required the use of eight shovels, and nine were actually employed, most of which were Marion 60 and 70, equipped with 2½-yd. dippers. One Marion 75 with a

material was removed and at one point a fill 50 ft. high was made. At Mill Village, a small station west of Union City, the new eastbound line is about half a mile from the old line, which will be used for westbound traffic, necessitating the building of a separate station on the new line.

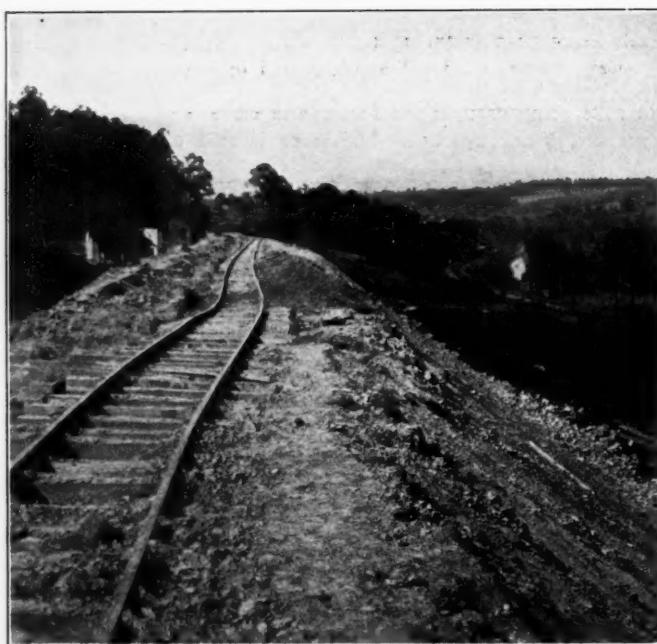
The most important bridge work was also on section "B." The first crossing of French Creek on the old line near Cambridge Springs consisted of two 138-ft. and one 152-ft. deck truss spans. The new bridge parallels the old one at a distance of about 50 ft. on the south side, the new grade at this point



Type of Abutment Used for Overhead Highway Bridge

being 20 ft. higher than the old line. A slight channel change at this crossing was necessary, which was handled by a derrick with a clam shell bucket. Just east of this crossing of French Creek, the new eastbound line rises and swings to the left over the old line, crossing at an angle of about 16 deg. A steel girder bridge carries the new line over the westbound track.

The return crossing is made immediately adjacent to the second crossing of the old line over French Creek, the same structure being used to carry the new eastbound track over the creek and over the old single track line. This bridge consists of two 150-ft. deck trusses and two 106-ft. 6-in. approach deck plate girder spans. The old bridge over French Creek at this point is being renewed to conform to the increased loading used in the design of the new structures. About 8,630 yd. of masonry were required for the three piers and two abutments of the new bridge, the highest pier being about 87 ft. from footing to top of back wall. These piers are carried on pile foundations, the piles having a penetration of about 40 ft. The concrete was mixed by a ½-yd. mixer located at the foot of a distributing tower from which the piers could be reached. A locomotive crane with 45-ft. boom and a clam shell bucket unloaded the concrete material from cars set in on a siding along the old main line. A storage capacity of 200 yd. of sand and stone was provided; also a cement house having a capacity of 5,000 sacks. A trestle was built from the storage piles past the cement house and across the creek to the mixer location. The material was loaded from the storage piles into small push cars, which were run on this trestle to a point over the mixer and dumped by gravity. The concrete was dumped from the mixer into the elevating bucket of the distributing tower which was then elevated to the height necessary for any particular stage of the work. The tower was 112 ft. high with provision for dumping at elevations of 32 ft., 64 ft. and 96 ft. The troughs used to chute the concrete from this tower into the forms were unlined and were given a minimum slope of 3 in. per foot. In order to deposit the concrete at a number of places in each pier and thereby reduce the handling necessary inside the forms, several dumping points were provided along the wooden chutes so that sections of the sides of the chute could be removed and



New Fill for Eastbound Track. Old Line to be Used as Westbound Track Shown in Valley Below

4-yd. dipper was used. The dump cars were of 4-yd. capacity and 3-ft. gage. The largest fill on this section was just east of Cambridge Springs, containing about 871,000 cu. yd., and having a maximum height of 40 ft. and a length of 13,000 ft. A large part of this material was slate and shale taken from the adjacent cut which was 60 ft. deep and was widened to 80 ft. to secure additional material for the fill. A 70-ton shovel loading 4-yd. cars which were operated in 12-car trains, handled an average of about 450 cars of material a day in this cut. There were two other cuts on section "B" from each of which 500,000 cu. yd. of

inverted V shaped baffle boards set in to force the concrete through these openings.

SECTION "C."

On section "C," a new double track line was built for the entire length. The new line is between the old track and French Creek, its proximity to the stream at some points making rip rap necessary along the bank. Heavy stones for this purpose were brought from Ohio and placed by a derrick.

At one point on section "C," a 70-ft. rock face had to be cut down adjacent to the old track on the side opposite the stream in order to make room for a new second track. A steam shovel started working against the entire face of this cut but it was found that the danger of stones falling over the operated line was so great that this method had to be abandoned. The face of the cut was benched down, the rock being handled by a steam shovel into 4-yd. cars. In two cases it was necessary to excavate for a new temporary line about half a mile long in each case before beginning work on the new permanent line on account of the fact that the new grade was so far below the old and so close to it that the slope would have undercut the old embankment. In each case it was necessary to handle about 40,000 cu. yd. of material for the temporary track alone.

When this work is completed the Erie will have a 0.2 per cent. ruling grade eastbound from Meadville to Jersey City, a distance of 515.16 miles, with five short pusher grades, two of which are about to be eliminated. The way in which President Underwood is carrying out his plan of grade reduction upon the west end of the line will be the subject of another article.

This improvement work was started under the general supervision of H. H. Althouse, formerly chief engineer, and finished under R. C. Falconer, superintendent of construction. T. D. Pierce was assistant engineer in charge of the field work, being succeeded in that position before the close of the work by J. W. Smith.

THE STATE RAILROAD MAPS OF THE UNITED STATES

BY LEON DOMINIAN.

State railroad maps are generally published by state railroad commissions. The following table shows which of the states of the union have issued railroad maps:¹

State.	Publisher.	Place of publication.	Date of latest edition.	Scale of 1 in. to—
Connecticut ²	Connecticut Railroad Commissioners	Hartford	1912	6 miles
Florida	Department of Agriculture	Tallahassee	1912	10 miles
Georgia	Georgia Railroad Commission	Atlanta	1911	13 miles
Illinois	Illinois Railroad and Warehouse Commission	Springfield	1913	8 miles
Indiana	Railroad Commission of Indiana	Indianapolis	o-o-o	o-o-o
Iowa	Iowa Board of Railroad Commissioners	Des Moines	1910	8 miles
Kansas	Public Utilities Commission	Topeka	o-o-o	o-o-o
Kentucky	Kentucky Railroad Commission	Frankfort	1912	7.2 miles
Louisiana	Railroad Commission of Louisiana	Baton Rouge	1913	8 miles
Maine	Maine Railroad Commissioners	Augusta	1913	8 miles
Massachusetts ³	Massachusetts Board of Railroad Commissioners	Boston	1913	7 miles
Michigan	Michigan Railroad Commission	Lansing	1908	.....
Minnesota	Minnesota Railroad and Warehouse Commission	St. Paul	1913	10 miles
Mississippi	Mississippi Railroad Commission	Jackson	1911	13.3 miles
Missouri	Missouri Railroad and Warehouse Commission	Jefferson City	o-o-o	o-o-o

¹ A railroad map of the Territory of Alaska will be found accompanying the report of the Alaska Railroad Commission published as House Document No. 1346, 1913, Government Printing Office, Washington, D. C.

² A separate map of the street railways of Connecticut is also published on a scale of 1 in. = 3.2 miles, by the same commission.

³ A map of the street railways of Massachusetts is also published on a scale of 1 in. = 4 miles, by the same commission.

Montana	Montana Railroad Commission	Helena	1913	12 miles
Nebraska	Nebraska State Railway Commission	Lincoln	1911	10 miles
Nevada	Railroad Commission of Nevada	Carson City	1911	15.5 miles
New Hampshire	Public Service Commission of New Hampshire	Concord	1908	11.5 miles
New Jersey	New Jersey Board of Public Utility Commissioners	Trenton	1912	7 miles
New York	New York Public Service Commission	Albany	1912	7.5 miles
North Dakota ⁴	North Dakota Commissioners of Railroads	Bismarck	o-o-o	o-o-o
Ohio	Department of State	Columbus	1912	.....
Oklahoma	Oklahoma Corporation Commission	Oklahoma City	1913	10 miles
Pennsylvania ⁵	Pennsylvania State Railroad Commission	Harrisburg	1912	6 miles
South Carolina	Railroad Commission of South Carolina	Columbia	1912	15 miles
South Dakota	South Dakota Railroad Commissioners	Pierre	1910	12 miles
Tennessee	Tennessee Railroad Commissioners	Nashville	1908	12 miles
Texas	Texas Railroad Commission	Austin	1913	18 miles
Vermont	Public Service Commission of the State of Vermont	Newport	1912	4 miles
Washington	Public Service Commission of Washington	Olympia	1911	8 miles
Wisconsin	Railroad Commission of Wisconsin	Madison	1912	10 miles

The states enumerated below have not issued any railroad maps: Alabama; Arizona; Arkansas; California; Colorado. (In Colorado two unsuccessful attempts have been made to obtain an appropriation from the legislature for the purpose of compiling a railroad map.) Idaho; Maryland; New Mexico; North Carolina; Oregon; Rhode Island; Virginia; West Virginia, Wyoming.

Inspection of the maps published by the map-issuing states reveals the fact that none convey any information on the main factors affecting railroad traffic. They are confined mainly to the representation of the approximate location of the lines and stations. Additional data of varied character and importance are indicated on many. I shall describe them first and point out subsequently the need of emphasizing facts of fundamental value from the standpoint of railroad operation.

The different lines are distinguished by means of color on the railroad maps of many of the states. In Connecticut, Iowa, Kentucky, Maine, Mississippi, Montana, Nebraska, New Hampshire, Texas and Vermont, the maps show very little besides this differentiation. Mileage tables are sometimes added. In the map of Vermont a distinction is made between the steam and electric railroads. Maps of certain of the states, however, contain features of interest which deserve mention. The following critical compilation is offered in the hope that it may prove instructive.

Georgia.—An inset map showing distribution of soils accompanies the map of this state. Intimation of the wide field of cartographic representation is obtained by the manner in which population has been indicated. Heavy and light type are used in the inscription of names in order to express hundreds and thousands respectively. This representation is complemented by the use of special symbols which replace the ordinary small circle or dot indicating a town. Differentiation between these symbols serves to indicate the figure which precedes the hundreds or thousands. Thus a city symbol for 3 to 5 accompanied by a name in heavy type shows its population to be between 3 and 5 hundred inhabitants, whereas the same symbol accompanied by a name in light type would represent a town of from 3 to 5 thousand inhabitants. This is an excellent example of cartographic symbolism, which reveals how an indefinite number of combinations can be provided by the exercise of a little ingenuity in that respect.

Illinois.—The desire for thoroughness has led to the indication of distances in miles by light-face figures between railroad towns. This is somewhat unnecessary, as the map is apt to become over-

⁴ A map is being made.

⁵ Two maps are published by this commission: (a) steam railroads and (b) electric railways.

o-o-o These states have not published any railroad maps in recent years.

crowded and measurements of this kind can always be determined by scaling.

Louisiana.—The compilers of this map have added a separate symbol for telegraph and telephone lines. A small light-type rectangle is used to denote prepaid express and freight stations enumerated in the alphabetical list of places on the reverse side of the map. Cartographers will note that the place naturally designated for this symbol is on the map itself. Details of this kind reveal clearly lack of proper experience in map making.

Maryland.—No special railroad map is issued in this state. The map of Maryland on a scale of 1:187,500 or 1 inch to 3 miles prepared by the Maryland Geological Survey, which shows railroads, express and telegraph companies, is used. This map is a very accurate one. No attempt, however, has been made to bring out the railroad lines by emphasis of any kind.

Massachusetts.—In this state the narrow gage railroads are shown by a separate symbol. Cities and towns are differentiated according to their postal importance, different symbols being used for ordinary post offices, money order post offices, and post offices which have the same name as the town or city in which they are located.

Minnesota.—The diversity of data shown on the map of this state is interesting. Its multicolored network of lines spreads over symbols indicating Indian or Military Reservations and Congressional districts. Population figures in black follow names of cities and towns, while township and range numbers appear in red.

Nevada.—The map of this state is a hideous production, from the cartographic standpoint. The North and South ranges which characterize the orography of the Great Basin are crudely represented by what appears to be an army of caterpillars crawling over the sheet. The map has a certain value, however, in the absence of any other compilation, as the general direction of the railroad lines and the stations are shown. The passes and peaks of the Nevadan mountains have also been indicated, as well as their average height.

New Jersey.—The New Jersey railroad map departs from the usual style in this, that all the lines are shown in the same color, the only means of distinguishing between the various companies being a number which accompanies the line and corresponds to the name of the company tabulated on the sheet.

New York.—Although entitled Steam Railroad Map of the State of New York, the map shows electric railways as well as steam railroads, portions of which are electrically operated. It bears the stamp of having been carefully compiled. Transportation routes other than railroads (canals and important highways) are likewise shown on it.

Oklahoma.—The various lines are differentiated by means of color. Distances between stations are shown in black, while the mileage between principal points is shown in red. Sidings and spurs are also distinguished by their names in special type. As in the case of many of these state railroad maps, economic details are indicated by appropriate symbols. In this case oil and gas pipe lines, cotton factories and compresses, as well as flouring mills are shown. A valuable feature of this map and one that is not met with in any other consists in the printing of the names of the stations having agents in capitals. This is distinctly an element of railroad operation which can be advantageously shown on the maps of any of the sparsely settled western states.

Pennsylvania.—Two railroad maps are issued by this state. One shows steam railroads, the other electric railways. Both are examples of good cartography. In each the lines qualified by the motive power listed in the title are shown boldly in different colors, while the others appear in black. Industrial roads which are not common carriers and canals are indicated. The area of incorporated places is also shown. On the steam railroad map a separate symbol is used for trackage right and narrow gage railroads.

South Carolina.—Each line on the South Carolina map is distinguished by a number in addition to color. Express companies

are also shown. An unusual feature consists in the introduction of a special symbol to indicate banking towns. This gives a wider range of usefulness to the map, although it is not an essential element of railroad operation.

South Dakota.—Land reservation, whether Indian or military, as well as national forests, are shown on the map of this state.

Tennessee.—The sheet bristles with information, the nature of which might appropriately make the map fall under the head of an economic map rather than a railroad map. It is accompanied by a number of maps showing population, education, forestry, minerals and various of the state's agricultural productions.

Washington.—The railway lines are distinguished by symbol and color. A separate symbol serves to show the extent and direction of the logging railroads built in the forested regions of the state.

Wisconsin.—The main feature which characterizes this map is the distinction made between interstate and intrastate roads. Street and interurban railways are also indicated. The map is somewhat crowded by the representation of data which are somewhat irrelevant in the consideration of traffic, however useful in themselves. Thus a large variety of tabulated educational notes, including information on day schools for the deaf and the blind are shown. Lists of Indian reservations, islands, rivers, lakes, etc., likewise accompany this map.

TRAFFIC DATA DESIRABLE.

Why is it that none of the compilers of these maps has thought of representing traffic data? Traffic is the fundamental element of the railroad industry. The cartographer engaged on railroad work should therefore endeavor to represent this function as conspicuously as his means allow. Traffic may consist in the conveyance of passengers or of goods. Cartographic symbols could be made to discriminate between data pertaining to each. A very fair idea of passenger traffic at a given point will be obtained by ascertaining its daily average number of travelers. The choice of appropriate symbols to represent the number of passengers in hundreds, thousands or more is easy. This being determined, the next step consists in replacing on a railroad map the small circle or dot which usually indicates a city by one of these symbols which would then represent both settlement and the daily floating population.

Freight traffic can be represented in a similar manner. To prevent confusion by the simultaneous use of two sets of symbols the average tonnage handled daily at a given point can be indicated either by variations in the type used to print the locality's name, or else by adopting colors representing a progressive numerical sequence. The choice of units of 50,000 tons will prove satisfactory for general requirements.

So far traffic will be adequately represented with reference to stations. Routes shown on a map can likewise be rendered informative by the use of symbolism or coloring, sometimes preferably by a combination of both. Accordingly sections of lines will reveal the importance of their human traffic whenever symbols indicating the number of passenger cars hauled daily over their tracks are used. A color scheme can be employed simultaneously to denote the daily number of freight cars transported over given sections. In this case units of 5 to 10 cars will be found most acceptable.

Traffic territories also deserve being reproduced on a railroad map. They depend on freight rates; and these usually result from agreements concerning joint rates which have been made between the different operating companies. Such agreements refer to areas which can be considered as unit districts for matters of rate adjustments and classification. Many of them have been grouped together so that the whole area within the United States' boundaries may be divided for traffic purposes into three major districts. They are respectively known as the Official, Southern and Western classification Territory. The Official territory comprises the northeastern states between Lake Michigan

and the Atlantic. Western classification territory includes all of the United States west of Lake Michigan, the Illinois-Indiana state line and the Mississippi river from Cairo, Ill., to the Gulf of Mexico.⁶ The Southern territory extends south of the Kentucky and Virginia north boundaries.

These territorial divisions might be shown very appropriately on state railroad maps. Inasmuch as their boundaries coincide with state lines, a mere mention of the region in which a particular state map happens to fall would suffice.

A railroad map compiled in this manner conveys definite information in terms of traffic elements. Its functions as an expression of the essential facts pertaining to railroad operation will be universally intelligible, and the mention of "railroad map" in its title will be warranted.

Uniformity in general features is highly desirable in the railroad maps published by state railroad commissions. This depends on the selection of a suitable base. The state maps, which have been recently published by the United States Geological Survey on a scale of 1:500,000 or about 8 miles to the inch appear eminently suited to provide the exact degree of uniformity required. It is planned eventually to have all the states of the Union mapped on this scale.⁷ The maps are intended to serve

Price.	Price.	Price.
Alabama 20 cents	Indiana 15 cents	New Jersey 10 cents
Arkansas 20 cents	Iowa 20 cents	Ohio 20 cents
Delaware 10 cents	Michigan 45 cents	Tennessee — cents
Georgia 25 cents	Minnesota 40 cents	Vermont 10 cents
Illinois 25 cents	Mississippi 20 cents	

as bases for geological, forestry, agricultural and other maps. They can be considered as the most accurate compilations prepared in the United States. Their use will obviate plotting of a large portion of important detail as they show counties, county seats, cities, towns, villages, steam and electric railroads and drainage.

The 1:500,000 scale is desirable even in the case of the larger western states, as the advantages accruing from uniformity in this respect counterbalance the unwieldiness of large sheets. The possibility of using the different state maps in conjunction with one another deserves consideration as enhancing the individual value of each. The use of this scale furthermore endows the map with both the geographical and topographical character which would be conferred singly by the use of a smaller or larger scale respectively. At any rate a state railroad map should not be compiled on a scale less than 1:1,000,000.

Representation of relief is also desirable on a railroad map. The influence of variations in altitude has always been so significant in determining the direction of steel-clad routes that its omission often prevents proper understanding of the information sought by the map consultant. Hypsometrical coloring (use of light shades recommended) or contour lines, or both in certain cases, will be found advantageous.

The use of tables, reference lists or similar compilations on the same sheet with the map should be avoided as much as possible. It must not be forgotten after all that the function of a map consists precisely in conveying the information which is ordinarily shown in tabulated form. I can cite as a good example the case of the Louisiana state railroad map, which contains a table of the navigable waters in the state in which mileage figures and the head of navigation for each stream are tabulated. A trained cartographer would have dispensed altogether with this table and shown the information it contained by the use of appropriate symbols recorded on the map itself.

The above will show how a railroad map should depict conditions affecting traffic when the region indicated is limited to a single state. Even in larger areas where the routes of the different lines form the chief object of representation, indication of the main features characterizing traffic will never come amiss. All other details of a railroad map assume importance of a sec-

ondary order. Their presence on the map may often enhance its value. This is especially true of data referring to production of natural resources with which the element of traffic is intimately connected. The chief aim of a cartographer compiling a railroad map should consist, however, in presenting data on the traffic of the railway lines included within the boundaries of the area mapped.

PUBLIC RELATIONS OF THE RAILWAYS, THE INDUSTRIES AND THE BANKS*

BY HARRY A. WHEELER,

President of the Chamber of Commerce of the United States.

Based upon transportation stands the material prosperity of our country. The wealth of production, the wealth of conversion, the wealth of land values, the increased value of the labor of an individual, find their way back ultimately to the ability to transport the products of the soil or the products of the mine or the seas or the mill. And there is little wonder that in the early days of railroad transportation and railroad construction there was the greatest cordiality of the people as a whole toward this great development. There is little wonder to me that in those early days, by the will of the states and under the jurisdiction of the federal government, land grants were freely made to aid in the construction of our transportation lines, and I see nothing inimical to the relation of the railroad and the country at large in the fact that back in the early days to aid in that construction 150,000,000 acres of land from the public domain were given to aid in that particular work. Nor do I see in the fact that that grant was given out of the wealth of the general public any disadvantage to the general public, for I believe you will agree with me that under the principle of granting sections of land alternating on either side of a right of way and for varying distances back from the right of way, leaving an alternate section for disposition to the settler, immediately a transportation line was run through a given territory, that transportation line itself not only gave value to the land embodied in the grant, but likewise gave value to the infinitely greater area of land that was retained for disposition to those who had cultivated that land, and as a result the railroads of this country, in my judgment, have returned to the nation and to the people of the nation many times the value of the grants that lie close to the basis of their construction and development.

Besides the grants of land came the sale of state bonds, came the purchase of railroad securities, the sale of the securities from municipalities and from counties, and the co-operation of the individual, the aggregate sum I doubt if any man knows. I have passed through the records some time past to endeavor to find what was a reasonable value of land grants and of other means of assistance that were given to transportation companies. Somewhere around a billion dollars in all probability might be considered a fair estimate of the value of that contribution, and yet, just so sure as the increased value of land retained made it worth while that land grants should be made for railroad construction, just so sure every dollar that was expended by state or county or municipality or by the individual who personally contributed from his own means to this great cause of constructing our steel highways has come back again to state and county and municipality in increased taxable values, owing to the increase of the production of the soil of surrounding territory, owing to the development of industry and owing to the increase of population, and these things brought back into the tributaries that gave out these securities infinitely greater returns than those originally given for construction. So the debt in a measure has been paid, even as the loan of United States bonds for the construction of Pacific lines was ultimately repaid to the treasury of the United States with little

⁶Cf. *Atlas of Railway Traffic Maps* by W. A. Shelton, La Salle Extension University, Chicago, 1913.

⁷The following sheets can be obtained by application addressed to the Director of the U. S. Geological Survey, Washington, D. C.:

*Extracts from an address at the annual banquet of the National Industrial Traffic League, Chicago, November 13, 1913.

or no loss from loss of interest, on down through all the line the people at large have received back again in the facilities that they have been given and in the increased wealth, their pay for their generosity in helping to construct these great highways over which our products are transported.

Then came the change of tide. So cordial was the public attitude toward the construction of these roads that those who were engineering men became rather arbitrary and domineering. They felt that the power lay within them to do those things they pleased to do, that they could disregard their beneficiaries, and as a result the abuses crept in which ultimately led up to a point of estrangement between the transportation lines and the people of this country. They forgot the fact that the man who had products to dispose of and whose products must be transported, was interested in this problem and should have his right and say in the direction of the affairs of these corporations.

And from that one thing we find the best reason why the estrangement took place; why there has been a lack of sympathy, why it has been difficult for the railroads to get sometimes what they have deserved, and I am not saying that they have not asked for many things that they do not deserve. But in the fact that they have asked for things that are undeserved they are only asking for that which the seller of the commodity is asking, the right to command the highest price for the commodity he has to sell, and it is your business and your organization's, and will be throughout the time that you shall be organized, to see that nothing is "put over on you" and that you absolutely negative the efforts that seem to you unjust or seem to you undesirable, and let that court which has for its work the arbitration of these differences settle them, and settle them so that you and they also are satisfied.

Now, the railroads alone are not at fault in this matter, for I want to have you go back with me to the industrial side of this proposition, and let us see whether we have the right to throw stones from our point of view only at those whom we please to say are interposing unjust demands or unjust rates upon us. Let us look at the industrial development of our country. What has the industry of the nation received from the people as a contribution for its development? Why, up and down this broad land of ours, city after city, town by town, have for many, many years made grants of property, of buildings and of capital, in order that industries may be founded in their municipalities or in their territory and grow to opulence and wealth, and place and power. But that is not all. That is a tax upon the community. There is another thing that has raised our industries to our present place that has been a tax upon the whole people. Back from the close of the Civil War when we began by this system of protective tariffs to place a sheltering wing over our industries in order that they might live and thrive as against foreign competition, we have willingly as a people permitted ourselves to be taxed year after year in order that our industries may live and may grow to the power and place that they have reached at the present time, and that has been a tax which, if multiplied by the number of years of each of the contributions that have been made as the result of tariff upon our commodities, on which our industries have actually been founded, would in my judgment, if the aggregate could be told, mean a sum of money so infinitely greater than any contribution that was made for the building of transportation lines that the contribution for the transportation development would be small, indeed.

Now, this also has brought up for our industries exactly the same condition with respect to the relation of the general public toward industrial development that the general public has held towards the railroads of this country. They have said "We were willing that the industrial development of this country should go on under the protection of this government, we were willing to pay the high prices necessary as the result of that protection, we were willing to pay, even if these industries, for such part

of our products as they might not find a market for at home, offered that production abroad, that the offerings may be made at a price the same or lower than the goods were sold for in our own market;" and yet the people have not rescinded that condition so long as in the people's mind it has been desirable and necessary to lay the industrial foundation of this nation. But the people said, and rightly too, when the time came that our industries had become strong, when they were able, because of the acquisition of resource and wealth, of great plants efficiently organized and efficiently operated, to do without this protection, that the industries of this country had no right to demand that the people should be further taxed for those things no longer necessary. The people said to the industrial life, as they have said to the transportation life of this country, "We want these things regulated and adjusted." And, "We have helped you make what you have, we have built your industries for you, we have given you great strength by which you are able to go into the markets of the world and compete with all nations. Now, be fair to us and allow these tariffs to be removed," and the industries were not forehand enough voluntarily to offer the reduction of those protective tariffs.

Now, don't you see in this there is a direct relationship? I say that the transportation lines of this country should have been forehand enough to have anticipated the things that they have got to do, and the industries of our country should have been forehand and generous enough to have anticipated the requirements that have now been put upon them and have absolutely got to be met by them.

Our financial institutions are just as much at fault. These great aggregations of capital have been basic to much of the evil that has resulted and much of the estrangement that has resulted. The banking interests of our country have profited well by the manipulation of securities, both industrial and transportation. They have earned those things to which they were not entitled. They have earned bonuses and commissions for the issuance of securities for the development of these two great elements of wealth production that were excessive. They have traded in them. They have made the people pay the bill. They have reaped rewards that were larger than ordinary rewards of that kind, larger than we could in our own minds agree were just and right. They have been blind, also, to the fact that there must come as between the financial interests of this country and the people at large an adjustment and a settlement, and they are complaining bitterly that in this currency bill now being considered in the senate committee and that has passed the house there are conditions that are burdensome to the financial interests of the country and likely to take away from them privileges and prerogatives which they have enjoyed. They might just as well, make up their minds to the fact that they are going to be deprived of them and they might as well do it gracefully, for just so sure as we are here there will be currency legislation, and it will not be in the interest of the financial interests solely. It will be representative of the welfare of the people at large, and will be protective of those things which are necessary for finance to be protected in, but neither will the bankers of this country be permitted to dominate the functions that have to do with the distribution of wealth or the issuance of mediums of circulation, no more than will the railroads of this country in the years to come be dominated solely by those financial interests, or your industrial interests, which you largely represent, be able to go on the path which has been followed by those industries and interests in the years which have gone.

A period of readjustment is before us and upon us, and to my mind our duty should be to co-operate with those authorities that have to make the laws under which we must live, not that we shall be able to forestall legislation in the public interest, but that we may be able by co-operating with each other and with our legislative authorities to so steer those laws that

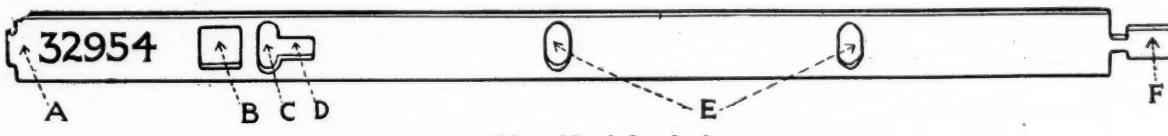
they shall not be absolutely destructive or obstructive of our progress.

The new day has come. These great transportation interests are sensing it and must sense it still more thoroughly. There will come the time, and speedily, when boards of directors of our transportation companies shall not be made up solely from the banking interests of the country. I believe as thoroughly as I am standing here that if it were left to the operating heads of our railroads to decide those questions which come between shipper and carrier there would be very, very little difficulty, for these men understand not only the needs of the territory through which the roads operate, but they understand the equity and the justice of the situation and are ready to serve if they feel that they will have the support of their boards of directors. Neither can you expect that men who are sitting in financial centers will be able adequately to direct the affairs of a great transportation system with the contact with life which they have upon that system. But the day will come when the boards of directors on our railroads will be equally composed of those who are shippers and those who are financiers, and of those

METAL CAR SEAL

The Metal Car Seal Company, Chicago, has recently placed an improved metal seal on the market, as shown in the illustrations. It is made of ordinary two-ply steel as furnished by the American Steel & Wire Company, and is punched as shown so that it may be easily bent in the shape of a triangle and locked by turning the numbered end completely back against one of the sides of the triangle. The composition of the metal is such that any attempt to unlock the seal will break off the numbered end, thereby breaking the seal and preventing tampering.

The seal is applied through the slot in the door pin with the numbered side out. It is bent at the punched holes E on either side of the pin, as shown, and the head F is passed through the slot C and pressed down into slot D, the neck at F being provided for this purpose. The numbered end A is then bent back on itself, the metal bending at the slot C and the projection of the F end passing through the square hole B. To open this seal it will readily be seen that the numbered end must be raised so that the F end can be raised out of the slot D, but in doing



Edgar Metal Car Seal

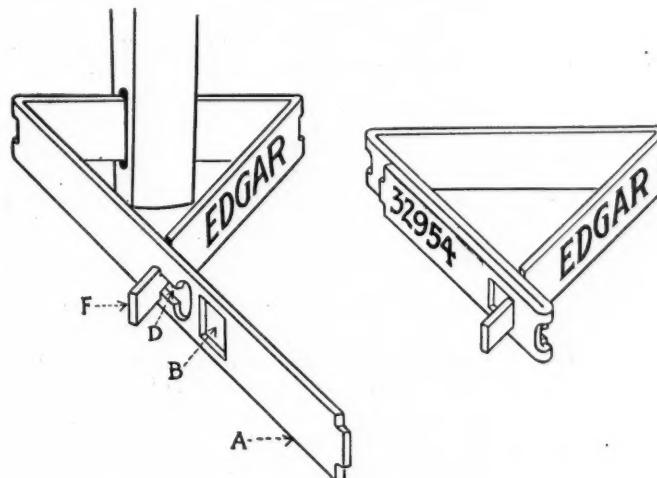
who are practical railroad men in addition, that day when there will be a balance of power, when in the directors' meetings it will not be simply a question of, "how much can we increase our earnings or dividends, how much stock can we put out," or "how much bonds can we float," but, "how can we operate a certain function of the state, this great transportation system of ours, to serve not only our stockholders but the people along our rights of way," and that day will solve the majority of the difficulties that we are now confronted with.

That day will also be equally beneficial to the commerce of our land when the directors of our great industrial corporations shall not only consist of the financial interests but shall consist of practical operators and those who are interested in the products that are manufactured, where that community of interest and that equality which will bring to all of these elements a better understanding of the conditions that exist, will make it possible for offerings of peace to be made to the people at large and where no further difficulty or estrangement will result, because the direction of the industrial corporations will be upon a fair and equitable and intelligent basis, and our financial institutions alike.

Gentlemen, we are all in the same boat. We cannot throw stones at the railroad, nor can they at us. We may have learned in our industrial life many things of value from them in point of organization and in point of getting what we wanted. The banks themselves are by no means guiltless. All of us have had a part in bringing about this great social condition, this wave which is sweeping over our country and all countries alike, and we altogether being in the same boat must of necessity sit down and counsel with each other as to what we can give and what we must take in order that there may be a restoration of confidence and harmony and unity as between the great producing interests of our country and the people of our country. One sentence that seems to me to be pat for us all is, "Let him that is without sin cast the first stone."

A SERIOUS RAILWAY ACCIDENT IN THE NETHERLANDS.—On the night of December 24 an express train for Amsterdam ran off the rails at Groningen. The three last coaches were derailed and the middle one, containing first and second class passengers, fell on its side and was run into by the last coach. Eight persons were killed and twelve injured.

this the numbered end will invariably break off and in this way break the seal. It is claimed that this seal may be used with any type of door connection. With a two-pin hook it is only necessary to put the seal through one pin. It also may be used with the hasp and staple without a pin, if for any reason it is impossible to seal through the pin. However, when sealing through a slot that is horizontal the metal seal should be so applied that



Method of Applying the Edgar Metal Car Seal

the number will be on the lower side so that it may be easily read. When sealing doors left partly open for air, a chain of these seals can be made, a record being taken of all the seals applied.

GERMAN RAILWAYS IN AFRICA.—During the past year 146 miles of new railway have been opened for traffic in German East Africa, 42 miles in the Cameroons and three miles in Togoland. This makes a total of 191 miles as compared with an increase of 254 miles in 1912. The aggregate mileage has now become 2,588 miles. The Tanganyika Railway will probably reach Lake Tanganyika some time this month. It is expected that provisional public through traffic will be commenced at the beginning of March from Dar-es-Salem to Kigoma.

General News Department

The second annual meeting of the National Chamber of Commerce will be held in Washington, February 11, 12 and 13.

An industrial safety conference is to be held at the University of Nevada, Reno, January 26 and 27. The Engineers' Club of the University will entertain the invited guests.

The general offices of the Erie in Chicago were removed on January 10 from the Railway Exchange Building to the thirteenth floor of the Transportation building.

The new passenger station and office building of the Missouri, Kansas & Texas at Parsons, Kan., was formally opened on January 8. A banquet was given by the Chamber of Commerce.

Representative Hinebaugh, of Illinois, has introduced in Congress a resolution calling on the Interstate Commerce Commission to investigate the influence of "interlocking" directorates in the New York Central and its controlled lines.

The sixth annual meeting of the Kansas Engineering Society will be held at Lawrence, Kan., on January 20 and 21. John S. Worley, of the board of valuation engineers of the Interstate Commerce Commission, will discuss "Valuation of Common Carriers."

The Pennsylvania Railroad has made formal application to the Interstate Commerce Commission for permission to continue the ownership and management of its steamers on the Great Lakes—the Anchor Line, of the Erie & Western Transportation Company.

The New York, New Haven & Hartford has made formal application to the Interstate Commerce Commission for permission to continue the ownership and management of the steamship lines under its control, running between New York and Providence, Fall River and ports on Long Island Sound.

At Morgantown, W. Va., Jan. 8, Judge G. B. Sturgiss ordered the grand jury to investigate the charge that the Buckhannon & Northern Railroad was jointly owned by two or more competing railroads, and if they found this to be true, to return an indictment under the State law. The Buckhannon & Northern was completed more than a year ago but has never been operated.

Statistics given out by the Illinois Central show that no passenger has been killed on its Chicago suburban trains for whom the company has been liable by contributory negligence for 57 years, or since the service was established in 1856. The company transports an average of 45,000 suburban passengers a day in Chicago. For 45 months no revenue passenger has been killed.

The doings of the freight claim office must henceforth be reported in detail by every railroad to the Interstate Commerce Commission, an order having been issued calling for quarterly reports on this subject. The data called for will include, besides the usual statistics, statements showing what portion of claims are settled within 30 days; what portion within 60, etc.; and the causes of delays must be given.

For the purpose of reducing the number of accidents at highway crossings the Chicago & North Western, at the recommendation of its Central Safety Committee, is putting up a large number of special warning signs 400 or 500 feet from the track at crossings where the view of approaching trains is materially obstructed. Approximately 500 of these signs have been set up at crossings in Illinois and Iowa.

David I. Walsh, the new governor of Massachusetts, made the Boston & Maine railroad the subject of the greater part of his inaugural address. He recommended the formation of a new corporation in which the stocks of the leased lines should be merged with those of the Boston & Maine. He believed that such a railroad corporation would be substantially in accordance with the "traditionally sound theories of the state." The governor

criticized as unsound and wasteful the contracts of the Boston & Maine with the Pullman Company and American Express.

Alfalfa on Railroad Ground

The Chicago & North Western has much of its right of way, particularly along the lines reaching to Hastings and Superior, Neb., along the South Platte river, turned over to farmers living tributary to the lines, for the purpose of raising alfalfa. This arrangement has been existing for the past five years, during which time 100 leases have been made, covering about 400 acres of ground. In the beginning farmers were slow to take advantage of this opportunity, for alfalfa growing at that time was, comparatively speaking, hardly known. With the great increase in popularity of this wonderful forage plant, however, the applications for leases are increasing. No fee is charged farmers for the use of the ground, but it is reserved for those living along the lines of the Chicago & North Western. This plan has created a spirit of goodwill between the railroad and farmers interested, which could not be obtained in any other way. In addition it has aided the industrious farmers financially, and has beautified and improved the right of way by eliminating obnoxious weeds and substituting a cultivated and pleasing appearance.

Taxation in Illinois

The state auditor of Illinois has notified the Illinois Central of an increase in its tax assessment for 1913 amounting to \$2,171,723, based on a new construction of the company's charter provisions. Under the charter the company is required to pay the state 5 per cent. of the gross income of its charter line in Illinois and in addition a state tax based on a valuation made by the auditor of public accounts, the total not to exceed 7 per cent. of the gross income. The state auditor now wishes to assess the company's property at its full valuation, instead of one-third, as in the case of other property. Charles H. Markham, president of the Illinois Central, has issued a statement stating that the proposed method overrides a previous opinion of the attorney general of the state and that the proposed valuation duplicates the assessment of rolling stock and other property already taxed on the non-charter lines. He says the company under the 7 per cent provision pays double the rate paid by any other railroad company, and that "at present, out of every \$100 the company receives from its charter lines, it pays \$7 to the state, regardless of whether the business pays a profit or not. Compare this with the average of \$4.50 paid as taxes by the company out of every \$100 taken in in all the states in which it operates, and it will be seen that the state of Illinois is certainly not underpaid."

Report on Smoke Abatement in Chicago

The Chicago Association of Commerce Committee on Smoke Abatement and Electrification of Railway Terminals has submitted a report to the association stating it has practically completed its investigation of the situation with respect to smoke in Chicago, but it has not completed its studies as to the remedy. The report says in part: "Meanwhile the committee is actively at work upon a program of study and design touching the important problems affecting the technical practicability and the cost of complete electrification. This is a problem presenting many details, each one of which is receiving careful and systematic attention."

"Studies are being made also concerning the financial practicability of carrying out the necessarily extensive program for electrification of the railway terminals of Chicago, in the event that such electrification shall be recommended in the committee's report."

"In conclusion, it may not be amiss to say that most of the

materials necessary to solve the question of the necessity for the electrification of Chicago's railway terminals and the mechanical feasibility of such electrification are in hand, but that the information so far gathered as to the financial practicability of such an undertaking is not sufficient at the present time to enable the committee to determine this phase of the problem."

Change in Per Diem Rule

The American Railway Association has adopted by letter ballot the proposed change in per diem rule five recommended by the committee on relations between railways, effective January 1. This rule was published in the *Railway Age Gazette* December 5, p. 1087. There were 295 roads in favor, owning 2,079,181 cars and 40 roads against, owning 176,814 cars, with 68 roads not voting, owning 229,589 cars.

Passenger Trains About San Francisco

The great number of Southern Pacific passenger trains operated daily within a radius of 50 miles from San Francisco is shown in figures compiled in the office of General Superintendent J. M. Davis of the Central District. On the Coast line—San Jose, San Bruno, Mayfield, Los Gatos—there are 73 trains daily, from Monday to Friday; 74 on Saturdays and 55 on Sundays.

On the Transbay lines—Oakland through Port Costa; Oakland-Niles-Newark; Redwood-Niles and Niles-San Jose—there are 86 daily from Monday to Friday, and an equal number on Saturdays and Sundays. On the Vallejo-Suisun-Calistoga-Santa Rosa there are 24 daily.

On the electric suburban system there are 1,156 trains handled daily between Monday and Friday; 1,205 on Saturdays and 1,180 on Sundays.

On the steam suburban lines—Shellmound to Richmond and to Stonehurst—there are 34 daily except Sundays, when there are 31.

The total is 1,373 daily between Monday and Friday; 1,423 on Saturdays and 1,376 on Sundays.—*Southern Pacific Bulletin*.

Report on Collision at Buckatunna, Miss.

The Interstate Commerce Commission has issued a report, dated November 28, giving the conclusions of Chief Inspector H. W. Belnap, as to the causes of a derailment which occurred on the Mobile & Ohio near Buckatunna (State Line), Miss., October 19 last, when 17 passengers (soldiers) were killed and 139 passengers and 6 employees were injured. The train was running on a descending grade about 55 miles an hour over a curve of three degrees, the super-elevation of the outer rail being 3.5 in. The cause of the derailment could not be determined with certainty, but it is believed to have been due to excessive speed on a curved track with insufficient super-elevation.

The forward wheels of the tender were the first to leave the rails. After running a short distance the tender struck a bridge and it is believed that its derailed wheels bunched and broke the ties; this weakened the bridge and the cars fell through and were wrecked. The engine ran about 600 ft. farther and the tender about 300 ft. The bridge had guard timbers 7 in. x 8 in. laid 16 in. outside of the rails of the track. The guard timbers were fastened by lag screws to every second tie; but nothing is said about anything more than this to keep the ties from being bunched. The engine was of the 10-wheel type, weighing 84 tons; weight of tender 72 tons. The tender had in it about 10 tons of coal and 5,000 gallons of water; capacity of tender 15 tons of coal and 7,000 gals. of water. The engineman and others estimated the speed of the train at from 30 to 45 miles an hour, but soldiers on the rear platform of the rear car had been timing the speed at mileposts with watches, and found it upward of 55 miles an hour.

The report concludes that, on account of the high speed, and the insufficient super-elevation of the curve, probably the wheels on the left side of the tender were lifted from the rails; this being due to "the high center of gravity of the

tender and the surging of the water to one side of the cistern." There is no description of the tender.

The Air Brake Association

The Air Brake Association will hold its twenty-first annual convention at the Hotel Pontchartrain, Detroit, Mich., from May 5 to May 8. The subjects to be discussed are as follows: Electro-Pneumatic Signal System for Passenger Trains, by L. N. Armstrong; Air Hose, by T. W. Dow; Clasp Type of Foundation Brake Gear for Heavy Passenger Equipment Cars, by T. L. Burton; Caboose Air Gages and Conductor's Valves, by Mark Purcell; The Analysis of the Factors Involved in Controlling and Stopping Passenger Trains, by Walter V. Turner; One Hundred Per Cent. Efficiency of Freight Train Brakes, by Fred Von Bergen; Topical Subject, Mountain Grade Work, by H. H. Horning, and Topical Subject, Modern Train Building, by George W. Nolan. One of the features of the convention will be a manufacturers' exploitation meeting. An afternoon will be set aside for the members to assemble in the convention hall, where each exhibitor will be given from 15 to 30 minutes time in which to exploit by discourse, chart, or lantern slide, etc., or in any manner he chooses, the product or device he desires to place before the assembly.

American Society of Engineering Contractors

The fifth annual meeting of the American Society of Engineering Contractors will be held in the United Engineering building, New York City, on January 16.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 5-8, Hotel Pontchartrain, Detroit, Mich.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass. Convention, May 19, 1914, St. Louis.
- AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Next convention, April 21, Houston, Tex.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Thursday and Friday in May.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 29 W. 39th St., New York. Mid-year conference, New York, January 29, 30, 31.
- AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—H. G. McConaughy, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.
- AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 20-22, 1914, Los Angeles, Cal.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 17-20, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Karpfen building, Chicago. June 15-17, Atlantic City, N. J.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga. Next convention, July 20-22, Chicago.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 West 57th St., New York; 1st and 3d Wed., except June and August, New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 11 Broadway, New York; 2d Tuesday of each month, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Next convention, January 20-22, 1914, New Orleans, La.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, Highland Park, Ill. Annual meeting, June 24, Minneapolis, Minn.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md. Next convention, May, 1914, St. Paul, Minn.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago. Next convention, May 20-23, New Orleans, La.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.
- ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Detroit, Mich. Meeting with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and August, Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursday, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—E. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after second Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. H. Hiles, Oliver building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va. Next convention, May 20-22, Galveston, Tex.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago. Annual convention, May 18-22, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn. Next convention, July 14-17, Hotel Sherman, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Next convention, third Tuesday in August.

MAINTENANCE OF WAY & MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next convention, November 17-19, 1914, Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Next annual meeting, May 26-29, Hotel Waldron, Philadelphia.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Karpen building, Chicago, June 10-12, Atlantic City, N. J.

MASTER CAR & LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3rd Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria; 2d Thursday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Mobile & Ohio, Mobile, Ala.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City South, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.

RAILWAY TEL. & TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W. Sterling, Ill. Next convention, September 8-10, 1914, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next convention, June 16, Jacksonville, Fla.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Next meeting, August, Chicago.

UTAH SOCIETY OF ENGINEERS.—Fred D. Ulmer, Oregon Short Line, Salt Lake City, Utah; 3d Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Roseyear, P. O. Box 1707; Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Karpen building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News

B. L. Winchell, director of traffic of the Union Pacific, will be the principal speaker at the annual banquet of the Railroad Club of Kansas City on January 30.

Hon. Charles A. Prouty of the Interstate Commerce Commission will address the Traffic Club of Chicago at a luncheon on January 16 at the La Salle hotel.

The Oregon-Washington Railroad & Navigation Company has made a reduction from \$4.45 to \$4 in the rate per ton on coal from the fields in Wyoming to Spokane and vicinity. A reduction has also been made in the rate on coal from mines in Utah.

The Boston & Maine has taken off a number of local passenger trains; and before the new time table went into effect complaints were made to the Massachusetts Public Service Commission, declaring that the service had been unreasonably curtailed.

The Chamber of Commerce of New York has adopted a resolution favoring an advance in freight rates on the eastern railroads, declaring that a prompt advance would be of an act of justice to the railroads and also beneficial to the entire business of the United States.

In the Federal Court, at Spokane, Wash., January 12, the grand jury returned indictments against the vice-president, Austin Corbin, and the general freight agent, G. H. Martin, of the Spokane International Railway on charges of violating the Interstate Commerce Law in carrying freight over the road free for Mr. Corbin.

The Delaware, Lackawanna & Western, which has wireless telegraph stations at Scranton, Pa., and Binghamton, N. Y., and which, in connection with these stations, sends messages to and from moving trains, is to extend the operation of the "wireless" by the erection of stations at Port Morris, N. J., about 100 miles east of Scranton, and at Bath, N. Y., about 100 miles west of Binghamton.

Secretary John M. Glenn of the Illinois Manufacturers' Association has distributed 10,000 circulars among members of the association and shippers generally, urging them to telegraph President Wilson and senators and congressmen from Illinois to use their influence in favor of the 5 per cent. advance in freight rates in Official Classification territory. "Make business boom," says the circular. "Do not suggest selfish exceptions as to lake and rail rates. Closed plants mean idleness and suffering to the entire country. With the industries shut down all business will be at a standstill. Act and act promptly. The Interstate Commerce Commission should be impressed with the importance of a quick decision."

Car Surpluses and Shortages

Arthur Hale, chairman of the committee on relations between railroads of the American Railway Association, in presenting statistical bulletin No. 159, giving a summary of car surpluses and shortages, by groups, from September 12, 1912, to January 1, 1914, says: The total surplus on January 1, 1914, was 190,521 cars; on December 15, 1913, 107,513 cars, and on December 31, 1912, 50,659 cars.

Compared with the preceding period, there is an increase of 83,008 cars, of which 30,669 is in box, 4,268 in flat, 36,100 in coal and gondola and 11,971 in miscellaneous car surplus. The increase in box car surplus is in groups 2 (New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania), 3 (Ohio, Indiana, Michigan and Western Pennsylvania), 4 (the Virginias and Carolinas), 5 (Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida), 7 (Montana, Wyoming and the Dakotas), 8 (Kansas, Colorado, Oklahoma, Missouri and Arkansas), 9 (Texas, Louisiana and Mexico), 10 (Washington, Oregon, Idaho, California, Nevada and Arizona), and 11 (Canadian Lines). The increase in flat car surplus is in groups 1 (New England Lines), 2, 3, 4, 5, 8, 9, 10 and 11 (as above) and 6 (Iowa, Illinois, Wisconsin and Minnesota). The increase in coal and gondola car surplus is in all groups, except 6, 9 and 11 (as above). The

increase in miscellaneous car surplus is in all groups (as above).

The total shortage on January 1, 1914, was 1,671 cars; on December 15, 1913, 5,968 cars, and on December 31, 1912, 33,601 cars.

Compared with the preceding period, there is a decrease in the total car shortage of 4,297 cars, of which 1,669 is in box, 2,238 in coal and gondola, 2,018 in miscellaneous and an increase of 42 in flat car shortage. The decrease in box car shortage is in all groups except 2 (as above). The decrease in coal and gondola car shortage is in groups 4, 5, 7, 8 and 10 (as above). The decrease in miscellaneous car shortage is in all groups except 2 and 9 (as above). The increase in flat car shortage is in group 8 (as above).

Compared with the corresponding period of last year, there is

total car shortage of 31,930 cars, of which 23,026 is in box, 2,317 in flat, 4,679 in coal and gondola and 1,908 in miscellaneous car shortage.

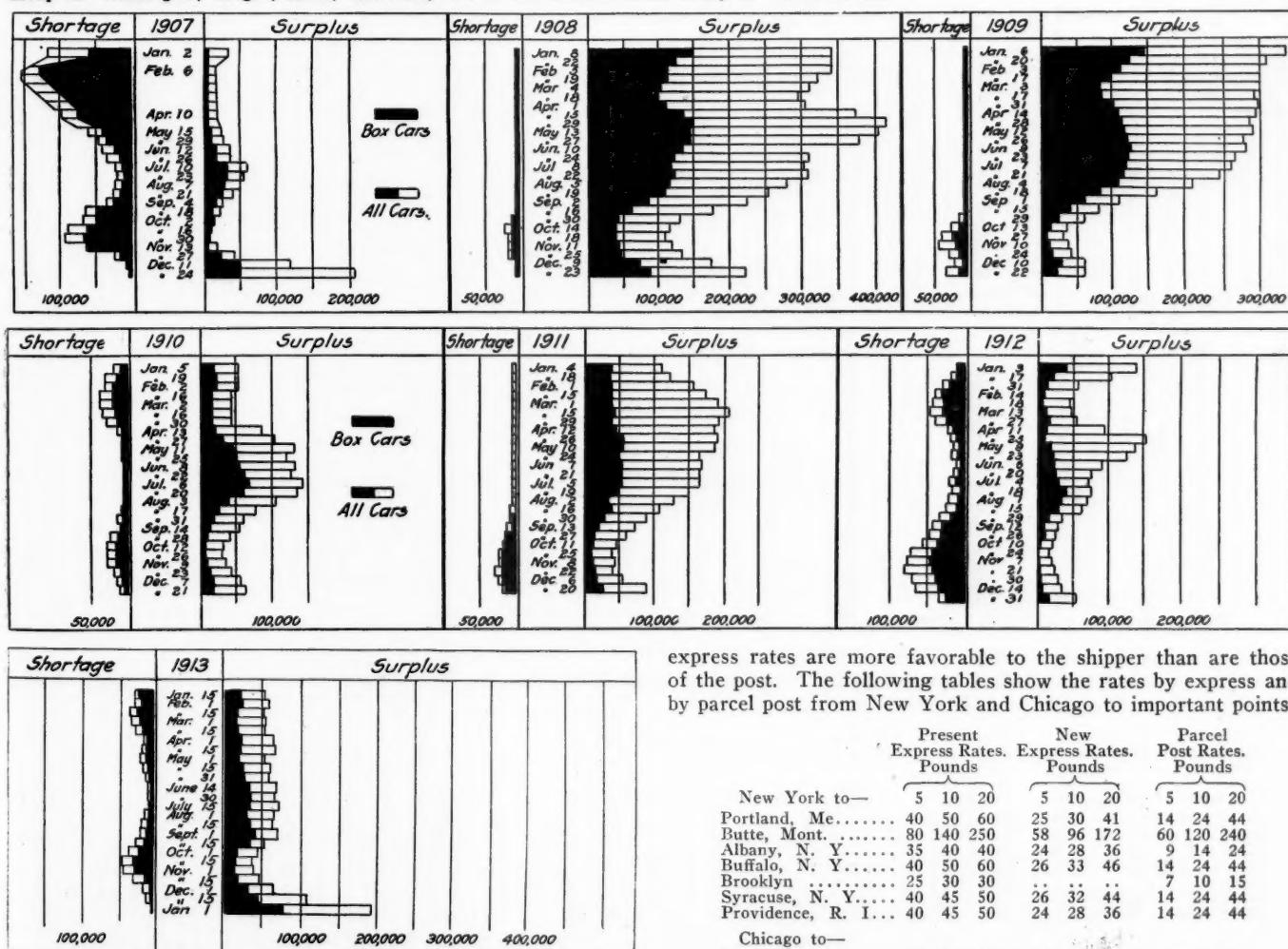
The accompanying table gives car surplus and shortage figures by groups for the last period covered in the report, and the diagram shows total bi-weekly surpluses and shortages from 1907 to 1914:

The Reduced Express Rates

The *Journal of Commerce*, New York City, has made a comparison of the rates charged for parcels by post and the reduced rates which are to be charged by the express companies, beginning next month, and finds that in many cases the

Date	No. of roads.	CAR SURPLUSES AND SHORTAGES.					Shortages				
		Surpluses	Coal, gondola	Other kinds.	Total.	Box.	Flat. and hopper.	Coal, gondola	Other kinds.	Total.	
Group *1.—January 1, 1914.....	7	270	551	571	291	1,683	252	0	0	3	255
" 2—" " 1, 1914.....	33	5,881	455	16,311	5,030	27,677	6	3	0	0	9
" 3—" " 1, 1914.....	27	11,594	1,598	36,513	3,552	53,257	29	3	0	.9	41
" 4—" " 1, 1914.....	14	10,111	1,118	1,811	2,354	15,394	0	0	29	2	31
" 5—" " 1, 1914.....	22	5,155	494	6,201	2,323	14,173	115	66	0	0	181
" 6—" " 1, 1914.....	28	5,451	686	4,151	4,381	14,669	179	15	2	1	197
" 7—" " 1, 1914.....	5	414	117	300	1,009	1,840	221	0	0	0	221
" 8—" " 1, 1914.....	17	5,163	421	2,563	2,178	10,325	18	343	1	26	388
" 9—" " 1, 1914.....	12	3,046	356	423	932	4,757	0	0	22	12	34
" 10—" " 1, 1914.....	21	8,987	2,891	3,691	8,986	24,555	0	4	3	57	64
" 11—" " 1, 1914.....	5	17,753	1,848	0	2,590	22,191	250	0	0	0	250
Total	191	73,825	10,535	72,535	33,626	190,521	1,070	434	57	110	1,671

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin and Minnesota lines; Group 7—Montana, Wyoming, Nebraska, North Dakota and South Dakota lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Washington, Oregon, Idaho, California, Nevada and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages, 1907 to 1914

an increase in the total car surplus of 139,862 cars, of which 60,747 is in box, 6,454 in flat, 55,712 in coal and gondola and 16,949 in miscellaneous car surplus. There is a decrease in the

express rates are more favorable to the shipper than are those of the post. The following tables show the rates by express and by parcel post from New York and Chicago to important points:

	Present Express Rates. Pounds	New Express Rates. Pounds			Parcel Post Rates. Pounds		
		5	10	20	5	10	20
New York to—							
Portland, Me.	40	50	60	25	30	41	14 24 44
Butte, Mont.	80	140	250	58	96	172	60 120 240
Albany, N. Y.	35	40	40	24	28	36	9 14 24
Buffalo, N. Y.	40	50	60	26	33	46	14 24 44
Brooklyn	25	30	30	. . .	. . .	. . .	7 10 15
Syracuse, N. Y.	40	45	50	26	32	44	14 24 44
Providence, R. I.	40	45	50	24	28	36	14 24 44
Chicago to—							
Portland, Me.	65	80	110	32	44	69	32 62 122
Butte, Mont.	80	125	200	52	83	147	41 81 161
Albany, N. Y.	60	75	100	30	41	62	32 62 122
Buffalo, N. Y.	50	60	75	28	36	52	23 43 83
New York	60	75	100	31	42	64	32 62 122
Syracuse, N. Y.	60	75	100	29	38	56	23 43 83
Utica, N. Y.	60	75	100	29	39	56	32 62 122
Providence, R. I.	60	75	100	32	43	67	32 62 122

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER, 1913

Name of road.	Average mileage operated during period.			Operating revenues—			Maintenance of way and structures, equipment.			Operating expenses—			Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Operating (or dear.) comp. with last year.
	Freight.	Passenger.	Total.	Total.	Traffic.	Transportation.	General.	Total.	inc. misc.	Total.	inc. misc.	Total.					
Alabama & Vicksburg.....	\$122,166	\$2,956	\$127,045	\$28,703	\$34,937	\$57,268	\$5,832	\$130,456	\$6,589	\$112	\$112	\$34,227	\$12,230	\$16,926	\$34,227	\$3,980	
Alabama Great Southern.....	309	102,382	495,951	58,297	114,821	13,479	10,592	355,613	10,338	—282	123,130	—36	13,930	41,176	13,930	—8,599	
Aun Arbor.....	292	132,629	45,553	192,017	23,907	27,263	5,001	6,397	136,875	55,142	—36	41,176	13,930	14,336	41,176	5,721	
Arizona & New Mexico.....	109	65,673	9,444	79,386	11,386	16,758	3,805	41,680	37,006	—36	37,306	9,400	14,336	41,176	—4,97		
Arizona Eastern.....	367	184,358	45,392	242,536	28,102	32,270	6,021	10,850	136,807	105,729	—36	90,027	15,705	109,309	90,027	—19,43	
Atchison, Topeka & Santa Fe.....	8,341	5,358,750	2,040,085	8,063,301	1,015,665	1,372,727	175,154	2,348,938	5,100,853	2,902,448	5,100,853	3,955,861	2,566,587	4,73,606	2,566,587	—47,606	
Atlantic & St. Lawrence Fe.....	167	114,720	25,420	149,878	19,178	20,557	6,021	56,936	105,903	3,841	105,903	10,157	33,818	36,561	33,818	36,561	
Atlanta & West Point.....	93	58,409	44,226	115,950	15,856	21,626	5,136	37,828	4,440	84,886	31,064	328	6,484	24,908	24,908	21,185	
Atlanta, Birmingham & Atlantic City.....	645	246,973	60,665	325,620	55,480	55,480	9,355	20,017	125,984	11,756	25,153	14,336	6,758	69,551	12,176	12,176	
Baltimore & Ohio—St. Louis.....	167	63,672	252,883	60,122	327,881	327,881	9,355	20,017	76,414	14,401	144,117	15,790	2,639	9,000	27,429	—15,158	
Atlantic Coast Line.....	4,620	2,324,135	725,800	3,306,209	406,289	504,093	58,928	1,115,100	100,791	2,185,201	1,115,100	132,000	989,008	122,977	989,008	122,977	
Baltimore & Ohio—Chicago Terminal.....	277	6,235,255	1,185,757	7,925,250	1,100,634	1,420,267	2,246	106,404	9,700	6,337,782	1,588,513	85,263	20,168	14,159	33,818	36,561	
Bangor & Aroostook.....	631	252,883	21	255,979	40,073	13,615	486	105,162	6,776	166,112	89,867	—369	6,758	109,309	15,991	15,991	
Belt Ry. Co. of Chicago.....	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
Bessemer & Lake Erie.....	204	694,484	29,746	690,483	62,344	190,725	8,534	187,129	10,648	459,380	231,103	38,000	193,103	70,386	70,386	70,386	
Birmingham & Garfield.....	26	149,326	4,594	154,731	12,308	26,360	212,277	3,363,985	190,564	6,337,782	1,588,513	3,340	98,405	60,676	60,676	60,676	
Birmingham Southern.....	43	59,987	945	97,267	16,645	10,648	509	32,756	4,120	64,678	32,589	1,805	30,784	8,637	8,637	8,637	
Boston & Maine.....	242	2,424,233	1,234,225	3,976,980	33,254	67,446	103,144	48,428	5,525	111,201	10,927	18,142	19,021	45,320	11,487	11,487	
Buffalo & Susquehanna R. R.....	253	132,280	8,047	144,354	30,686	28,607	1,213	54,630	8,672	123,808	20,546	—369	26,146	12,266	12,266	12,266	
Buffalo, Rochester & Pittsburgh.....	91	32,457	8,554	44,011	12,146	28,166	444	22,661	2,561	65,978	21,967	1,600	23,566	—11,885	—11,885	—11,885	
Butte, Anaconda & Pacific.....	576	796,646	92,909	915,290	120,601	17,180	10,899	346,674	2,651	52,986	101,745	—668	18,000	23,816	4,807	4,807	
Canadian Pacific Lines in Maine.....	90	99,141	10,642	109,783	23,902	33,017	37,193	22,951	2,651	89,699	30,902	2,900	28,002	9,405	9,405	9,405	
Carolina, Clinchfield & Ohio.....	233	53,060	25,654	79,702	19,928	33,254	17,246	6,748	10,344	3,344,781	62,999	—369	30,273	31,276	31,276	31,276	
Charleston & Western Carolina.....	248	214,847	14,816	232,958	15,513	27,722	19,830	10,007	8,897	101,007	131,951	—369	9,250	122,011	50,905	50,905	
Carolina, Clinch, & Ohio Ry. Co. of S. C.	12,972	2,150	32,674	15,376	171,912	286,539	95	1,458	4,286,540	41,120	963,167	33,839	5,000	750	9,488	753	
Central of Georgia.....	1,924	891,206	322,674	1,337,006	171,912	243,970	371,525	28,975	1,711	43,154	1,394,148	7403	50,979	330,263	6,688	6,688	
Central New Jersey.....	677	1,788,285	428,156	229,948	230,948	330,171	37,315	105,254	37,788	39,249	1,158,372	127,075	3,422	40,600	102,574	102,574	
Central New England.....	304	269,552	228,852	57,902	72,688	46,157	9,027	105,254	14,708	44,604	142,267	223	10,500	132,159	—10,231	—10,231	
Central Vermont.....	411	224,815	57,178	241,403	82,643	82,643	19,830	19,375	14,708	44,634	310,238	13,410	15,500	16,034	—45,302	—45,302	
Charleston & Western Carolina.....	341	143,982	37,729	190,175	33,968	25,772	3,472	70,641	5,485	1,39,338	50,837	5,000	45,837	4,287	4,287	4,287	
Chesapeake & Ohio Lines.....	2339	2,415,525	471,019	3,017,989	313,828	286,539	65,271	997,142	57,011	5,138	1,01,167	3,448	10,960	82,420	65,341	65,341	
Chicago & Alton.....	1,032	780,954	317,260	1,193,748	315,942	315,942	53,868	509,276	509,276	37,832	1,066,673	1,066,673	1,066,673	1,066,673	1,066,673	1,066,673	
Chicago & Eastern Illinois.....	1,282	1,038,831	228,852	239,976	1,381,897	197,917	176,985	26,437	517,784	39,249	1,158,372	233,525	2,703	15,283	9,939	—85,653	—85,653
Chicago & Erie.....	270	329,210	57,178	133,079	596,323	83,105	83,105	84,964	19,375	226,562	429,058	226,562	429,058	226,562	139,588	—15,015	—15,015
Chicago Junction.....	8091	4,603,623	1,745,914	7,030,102	893,656	981,466	1,752	104,666	7,713,769	145,926	2,139,483	21,061,619	3,448	353,000	1,829,865	—25,597	—25,597
Chicago, Peoria & Quincy.....	9,129	5,836,692	1,727,898	8,296,282	1,180,144	888,284	1,398,151	1,39,338	6,882	277,860	209,111	5,338,538	2,97,744	3,448	2,639,984	—37,453	—37,453
Chicago, Great Western.....	1,496	829,108	248,966	1,169,845	200,780	182,740	45,271	46,230	45,271	36,407	97,317	70,973	1,662	38,988	199,878	—96,407	—96,407
Chicago, Indiana & Southern.....	359	363,317	239,976	400,054	54,874	151,124	11,191	147,076	10,793	39,249	147,076	10,793	32,703	55,000	15,283	9,939	—85,653
Chicago, Indianapolis & Louisville.....	617	408,981	133,079	596,323	83,105	83,105	84,964	19,375	15,375	15,375	429,669	166,714	226	15,000	139,588	—15,015	—15,015
Chicago Junction.....	12	6,000,772	1,499,393	8,161,618	2,659,623	1,663,850	167,032	186,308	31,204	9,752	93,937	819	819	3,448	3,448	—8,597	—8,597
Chicago, Peoria & St. Paul.....	9,690	6,000,772	255,620	25,948	139,903	32,323	38,323	1,398,151	6,882	3,024	152,168	3,024	1,348,535	2,703	3,448	3,448	—8,597
Chicago, Rock Island & Gulf.....	255	105,607	122,202	816,969	277,020	277,192	36,239	9,012	104,624	8,322	182,740	182,740	—871	11,376	31,318	1,091,104	—116,485
Chicago, Rock Island & Gulf.....	477	201,390	168,578	5,587,487	1,488,135	715,645	715,645	156,031	2,355,554	152,433	1,416,564	1,416,564	141,666	1,416,564	1,416,564	1,416,564	1,416,564
Cincinnati, Northern.....	245	7,736,487	7,736,487	1,127	168,577	168,577	168,577	168,577	168,577	168,577	168,577	168,577	168,577	168,577	168,577	168,577	168,577
Chicago, Terre Haute & Southeastern.....	362	195,803	17,143	218,093	32,323	38,323	3,986	83,124	71,589	8,279	199,365	18,728	—727	11,500	6,501	—41,743	—41,743
Cincinnati, Hamilton & Dayton.....	1,015	610,070	110,992	630,287	75,881	82,533	9,958	20,282	18,728	18,728	20,282	18,728	3,567,554	35,675	141,436	—135,057	—135,057
Cincinnati, New Orleans & Texas Pacific.....	337	736,225	168,577	168,577	95,159	89,198	25,886	284,335	99,357	7,602	233,613	178,154	—1,043	3,578	141,436	—1	

REVENUES* AND EXPENSES* OF RAILWAYS

MONTH OF NOVEMBER, 1913—CONTINUED

Name of road.	Operating expenses—						Net operating revenue (or deficit).	Outside operations, net.	Operating income (or loss).	Increase (or decrease) comp. with last year.
	Average mileage operated during period.	Freight.	Passenger.	Total inc. misc.	Maintenance of structures and equipment.	Traffic.	Trans- portation.			
Duluth & Iron Range.....	272	\$324,685	\$28,162	\$360,290	\$89,148	\$65,972	\$849	\$119,503	\$10,147	\$285,619
Duluth, Missabe & Northern.....	356	455,901	33,622	496,508	96,316	79,824	2,483	137,256	11,546	\$4,516
Duluth, South Shore & Atlantic.....	627	149,441	94,729	262,225	59,017	32,049	8,444	108,730	8,855	\$4,516
Duluth, Winnipeg & Pacific.....	181	151,070	28,603	182,845	24,318	18,956	5,533	104,597	12,157	144,424
El Paso & Southwestern Co.....	592	596,507	104,731	126,588	116,673	14,804	217,929	26,928	50,292	25,618
Elgin, Joliet & Eastern.....	1,804	923,624	1	987,049	139,634	210,254	5,802	283,610	17,241	656,541
Erie.....	1,988	3,233,608	767,820	4,352,020	546,952	762,317	1,291	1,522,580	4,472	\$21,687
Florence & Cripple Creek.....	87	80,989	11,703	94,664	10,916	8,509	1,814	25,951	51,662	\$57,500
Florida East Coast.....	696	215,322	133,229	392,922	74,357	62,793	5,547	12,967	12,967	11,231
Fort Worth & Denver City.....	454	310,454	121,177	453,663	58,813	58,813	7,665	181,238	322,136	49,550
Galveston, Harrisburg & San Antonio.....	1,338	738,333	227,102	1,018,230	115,896	197,121	39,732	420,379	33,678	806,806
Georgia Southern & Florida.....	307	197,638	86,965	308,039	35,000	43,178	11,512	134,424	8,368	235,482
Grand Rapids & Indiana.....	395	268,605	137,286	443,046	60,155	28,296	8,346	88,665	11,147	75,557
Grand Trunk Western.....	347	347,900	190,000	577,234	85,250	75,672	12,765	202,717	15,523	366,832
Great Northern.....	7,769	5,841,295	1,251,298	7,534,281	739,379	857,739	98,450	2,010,713	123,251	3,829,332
Gulf, Colorado & Santa Fe.....	308	911,483	283,601	1,227,032	141,917	159,233	32,124	22,436	47,438	4,431
Hocking Valley & Texas Central.....	352	651,915	71,892	73,761	66,923	137,088	11,512	451,754	31,912	460,594
Houston, East & West Texas.....	1,160	1,160,318	172,672	84,275	84,300	13,137	232,324	15,991	466,466	144,449
Illinois Central.....	4,763	3,949,815	1,123,737	5,760,522	86,263	1,252,261	2,040	55,098	4,455	91,119
Indiana Harbor Belt.....	105	213,102	1,046,203	142,056	103,465	27,555	2,622	109,871	2,144,062	4,467,107
International & Great Northern.....	1,169	1,169,372	30,005	1,275,819	41,444	65,326	3,112	90,024	35,975	1,293,103
Kanawha & Michigan.....	1,177	239,427	1,161,338	299,295	1,148	1,148	13,137	273,961	17,173	206,900
Kansas City Southern.....	827	719,525	* 153,659	982,303	94,527	100,076	26,753	317,639	37,032	576,027
Lake Erie & Western.....	191	933,424	35,997	1,255,266	16,224	1,252,261	2,040	55,098	4,455	91,119
Lake Shore & Michigan Southern.....	1,853	2,827,628	939,984	4,298,225	65,294	64,841	67,072	2,114,062	129,956	4,467,107
Lehigh & New England.....	97	137,972	3,716	149,497	26,919	25,563	1,219,985	133,975	2,750	56,869
Lehigh Valley.....	269	164,338	791	169,148	24,445	21,296	1,116	27,555	39,313	61,994
Louisville & Nashville & St. Louis.....	1,438	3,924,008	1,039,708	5,310,447	818,681	1,019,289	111,317	1,821,350	100,076	406,276
Louisville, Henderson & St. Louis.....	4,923	3,992,295	500,848	903,426	144,372	144,372	144,155	13,653	432,375	27,244
Maine Central.....	1,399	1,120,707	642,385	257,852	966,559	160,631	161,433	46,664	40,664	5,500
Michigan Central.....	365	1,179,332	112,030	22,338	1,148,843	270,418	2,642	27,970	37,704	5,550
Midland Valley.....	1,373	1,18,429	43,624	2,855,627	368,225	36,671	25,227	75,695	1,334,378	2,397,714
Minneapolis & St. Louis.....	1,586	1,14,957	26,234	191,066	35,657	17,223	6,157	68,671	6,673	134,381
Missouri & North Arkansas.....	1,793	1,153,356	26,934	191,066	35,657	17,223	6,157	62,859	6,508	132,229
Missouri Central.....	351	208	120,241	51,859	181,098	19,600	19,600	7,801	13,137	145
Missouri & Arkansas.....	4,923	2,059,279	831,607	3,073,866	430,871	351,833	121,991	16,964	317,007	1,012,360
Missouri, Oklahoma & Gulf Ry. Co. of Texas.....	1,793	1,12,030	112,030	22,338	1,146,350	132,237	21,154	3,385	40,664	144,627
Minneapolis, St. Paul & Sault Ste. Marie.....	3,979	2,040,516	590,848	2,785,115	276,906	397,457	55,618	869,236	49,834	1,136,064
Monongahela Connecting.....	6	124,957	67	124,957	2,926	77,835	5,359	16,094	300	37,975
Morgan's La. & Tex. R. R. & S. S. Co.	404	367,623	80,875	46,209	1,107,316	174,671	53,708	13,108	8,701	95,658
New Orleans, Mobile & Hudson River.....	403	1,231	787,445	239,923	1,154,349	14,938	41,092	412,925	28,328	11,534
New Orleans, Northern & North Eastern.....	1,122	943,894	128,236	1,146,350	12,237	1,327,934	43,160	35,522	4,862	78,255
New Orleans & North Eastern.....	204	260,431	52,171	335,606	29,908	78,105	9,088	124,892	13,426	255,520
New Orleans Great Northern.....	283	112,923	32,833	158,982	22,521	18,502	2,707	43,227	8,701	63,324
New Orleans, Mobile & Mexico.....	403	161,609	30,120	203,226	29,135	18,260	4,066	59,848	7,193	118,902
New York Central & Hudson River.....	3,751	5,720,088	2,688,489	9,532,298	1,377,934	2,055,127	168,826	3,671,486	193,703	7,467,076
New York, Chicago & St. Louis.....	565	857,258	133,860	1,024,983	116,536	120,827	47,925	458,420	18,136	263,139
New York, New Haven & Hartford.....	2,060	2,791,494	2,273,117	5,661,449	695,424	875,559	45,771	2,416,241	147,914	1,480,590
New York, New Haven & Western.....	566	557,177	89,877	568,881	99,434	14,071	11,330	143,330	13,566	558,392
New York, Philadelphia & Norfolk.....	112	256,629	40,039	319,059	25,637	79,600	4,069	266,202	13,500	111,089

REVENUES AND EXPENSES OF RAILWAYS

Moyes et al. / Nootropics 1013

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF FISCAL YEAR, 1914

Name of road.	Operating expenses—						Net operating revenue (or deficit).			Operating income (or loss).	Increase (or decrease) comp. with last year.
	Average mileage operated during period.	Freight.	Pasenger.	Total inc. misc.	Way and Of. structures.	Maintenance equipment.	Traffic.	Trans- portation.	General.	Total.	
Alabama & Vicksbury.....	143	\$19,143	\$80,937	\$117,850	\$161,592	\$273,780	\$49,108	\$172,225	\$60,3165	\$42,050	-\$33,473
Alabama Great Southern.....	309	1,550,747	581,130	2,344,755	568,576	576,004	1,722,250	405,478	602,493	522,011	-\$74,243
Ann Arbor.....	292	650,088	26,660	963,055	116,188	128,023	24,709	32,894	631,587	69,650	22,923
Arizona & New Mexico.....	109	347,129	46,527	412,605	58,843	43,224	3,979	1,756	201,701	197,763	-\$41,641
Arizona Eastern.....	367	834,958	200,706	1,142,605	146,755	10,410	317,294	55,248	694,446	67,290	380,763
Atchison, Topeka & Santa Fe.....	8,341	26,957,195	10,655,950	40,712,889	5,843,784	7,179,533	863,222	11,279,851	919,085	26,085,475	14,627,414
Atlantic & St. Lawrence.....	167	444,505	168,988	633,450	133,639	95,836	224,401	288,878	560,488	50,785	12,715,516
Atlanta & West Point.....	93	255,115	215,269	555,186	79,106	108,150	25,440	168,615	405,478	32,422	22,177
Atlanta, Birmingham & Atlantic.....	645	1,066,204	305,581	1,442,172	242,880	241,991	70,266	567,648	1,178,914	71,684	8,177
Atlanta City.....	167	344,140	901,361	1,313,407	188,813	58,999	17,925	588,596	8,333	862,666	450,741
Atlantic Coast Line.....	4,620	9,330,321	3,459,539	13,823,359	2,110,759	2,433,221	251,728	5,008,358	493,656	10,357,733	3,465,626
Baltimore & Ohio Chicago Terminal.....	477	34,706,674	7,585,84	44,744,039	5,992,217	7,503,329	1,024,041	16,717,807	584,365	197,718	4,310
Baltimore & Ohio System.....	4,456	34,706,674	7,585,84	44,744,039	5,992,217	7,503,329	1,024,041	16,717,807	584,365	12,479,666	373,619
Bangor & Aroostook.....	631	1,078,584	334,449	1,455,633	198,728	25,599	1,437	52,842	969,089	48,596	467,357
Belt Ry. Co. of Chicago.....	21	.....	1,206,148	147,427	133,518	2,661	499,362	31,074	814,340	445,808	397,212
Bessemer & Lake Erie.....	204	4,544,534	215,924	4,821,676	410,215	885,100	55,176	1,099,150	56,849	2,506,490	2,315,186
Bingham & Garfield.....	26	55,737	569,843	529,473	711,125	101,260	4,538	109,788	272,432	147,756	208,676
Birmingham Southern.....	43	325,069	7,719,193	539,450	8,161,614	1,027,072	1,283,821	178,527	344,857	9,025	185,618
Boston & Maine.....	2,252	12,32,898	7,719,821	21,59,453	3,270,072	186,187	9,248,582	509,134	16,500,357	832,504	14,875
Buffalo & Susquehanna R. R.....	253	712,098	44,341	776,255	151,648	8,786	262,288	34,456	578,643	3,200	940,597
Buffalo & Susquehanna R. R.....	91	1,877,721	529,473	529,473	59,980	142,404	2,999	109,370	2,029,651	8,000	36,821
Buffalo, Rochester & Pittsburg.....	576	409,187	762,024	722,254	695,981	65,778	1,732,540	97,858	3,614,411	1,645,324	137,721
Butte, Anaconda & Pacific.....	90	488,579	761,115	66,614	101,110	3,388	228,062	16,993	437,080	12,550	83,933
Canadian Pacific Lines in Maine.....	233	1,206,867	121,637	193,794	193,003	135,526	32,403	195,553	525,334	55,000	53,097
Carolina, Clinch & Ohio Ry. & R. R.....	248	1,066,566	99,93,32	1,183,634	1,183,634	34,668	207,060	43,159	503,446	46,250	50,413
Carolina, Clinch & Ohio Ry. Co. of S. C.	18	59,279	1,679,654	1,679,654	6,190,664	833,182	1,293,159	174,183	2,029,651	1,660,284	40,668
Central of Georgia.....	1,924	4,002,654	4,002,654	12,119,306	1,309,306	1,308,892	1,892,137	166,077	3,636,801	12,151	250,051
Central of New Jersey.....	676	9,001,642	270,024	12,119,306	1,309,306	1,308,892	1,892,137	166,077	3,636,801	12,151	940,123
Central New England.....	304	1,332,793	205,542	1,65,634	237,320	1,427,071	6,744	460,694	23,618	252,500	655,996
Central Vermont.....	411	1,166,317	543,842	1,82,248	346,424	388,942	46,460	87,669	41,815	1,646,310	77,500
Charleston & Western Carolina.....	341	663,737	1,70,779	3,184	70,555	7,590	12,443	2,477	319,103	23,177	3,750
Charleston & Ohio Lines.....	2,339	11,965,497	1,71,090	15,42,128	1,76,3,886	285,783	4,866,286	372,377	10,339,963	512,221	12,267
Chicago & Alton.....	1,032	4,335,983	1,954,911	6,711,024	865,383	1,522,044	216,384	2,490,440	178,894	1,427,879	13,890
Chicago & Eastern Illinois.....	1,282	2,326,703	205,542	1,333,877	7,139,196	1,422,664	117,664	2,562,195	194,579	1,266,613	14,470
Chicago & Erie.....	270	1,795,490	324,889	239,175	509,276	556,115	1,186,295	1,186,295	65,264	22,519	73,882
Chicago & North Western.....	8,091	24,964,380	10,029,947	38,32,280	5,816,757	591,788	13,690,478	718,525	26,192,423	12,189,857	5,715
Chicago, Burlington & Quincy.....	9,129	29,435,527	10,465,934	43,56,412	5,22,222	5,22,222	7,096,412	208,343	13,187,996	1,644,801	-66,084
Chicago, Great Western & Southern.....	1,496	4,664,693	1,51,721	6,32,952	1,039,221	979,643	241,216	2,236,558	178,414	1,662,433	1,492,570
Chicago, Indiana & Southern.....	359	1,609,491	148,221	1,87,186	299,364	757,517	1,186,226	52,319	1,589,689	127,412	155,155
Chicago, Indianapolis & Louisville.....	617	2,083,503	777,896	3,12,759	465,112	447,024	102,632	1,106,113	219,9,22	926,692	127,215
Chicago Junction.....	12	29,475,712	8,945,618	41,642,803	5,703,825	6,370,726	6,405,405	14,319,433	725,941	27,652,927	12,645
Chicago, Peoria & St. Paul.....	960	2,332,222	1,58,186	1,72,783	1,46,218	1,122,172	34,842	34,842	25,236	9,416	49,644
Chicago, Rock Island & Pacific.....	477	897,043	971,912	1,28,226	1,41,039	1,41,039	49,221	34,842	93,452	5,234	234,355
Chicago, Terre Haute & Southern.....	7,665	18,919,756	8,596,262	29,30,542	4,11,225	4,11,225	795,168	11,407,488	762,224	21,979,030	8,051,512
Cincinnati, Hamilton & Dayton.....	1,015	3,302,983	794,019	3,71,278	518,219	738,658	1,95,951	300,308	3,842,038	1,74,756	1,921
Cincinnati, New Orleans & Texas Pacific.....	337	3,424,132	851,153	4,49,499	45,319	1,130,885	1,25,347	1,281,997	98,835	3,10,783	3,386,716
Cincinnati Northern.....	245	344,812	1,12,454	683,949	152,668	147,388	294,371	17,07,01	67,9,289	4,660	364
Cleveland, Cincinnati, Chic. & St. Louis.....	2,014	9,884,911	3,864,876	15,03,889	2,12,649	3,847,076	406,376	147,059	308,955	13,032,192	14,754
Colorado & Midland.....	338	657,540	1,44,717	862,285	171,465	190,210	43,330	367,01	28,399	800,505	62,350
Colorado & Southern.....	1,127	2,709,583	794,019	3,71,278	518,219	801,492	57,201	1,133,008	109,763	1,09,312	5,10,30
Cumberland Valley.....	162	1,20,481	335,657	1,32,129	35,341	167,373	26,402	491,895	39,922	1,08,558	438,737
Dalaware & Hudson Co.—R. R. Dept.....	854	8,549,581	1,689,975	10,39,615	80,259	1,510,594	150,710	3,508,123	319,014	6,293,701	4,298,915
Delaware, Lackawanna & Western.....	2,014	12,962,112	3,997,578	18,11,013	2,420,496	2,614,417	369,481	5,289,612	328,145	11,022,151	197,537
Denver & Rio Grande.....	2,15	338,165	2,781,308	11,314,810	1,86,634	1,960,866	3,32,419	218,980	7,644,389	3,670,421	18,198
Denver & Salt Lake.....	411	338,107	2,18,786	58,871	9,332	75,466	1,27,229	160,111	21,358	227,273	6,013
Detroit & Mackinac.....	411	343,988	162,997	54,1,329	64,593	81,464	12,63,3	185,226	13,359	360,275	42,175
Detroit & Toledo Shore Line.....	79	651,403	339,500	1,33,277	13,839	144,735	76,404	178,349	13,509	312,628	342,167
Detroit, Grand Haven & Milwaukee.....	191	641,000	525,846	14,094	45,465	36,010	53,619	27,592	879,295	514	29,500
Detroit River Tunnel.....	2	566,891	68,590	696,844	182,328	239,273	12,138	380,734	27,766	28,500	28,500
Detroit, Toledo & Ironton.....	441	566,891	68,590	696,844	182,328	239,273	12,138	380,734	27,766	28,500	28,500

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF FISCAL YEAR, 1914—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance			Trans-			Operating expenses			Net operating revenue (or deficit).			Operating income comp. with last year.		
		Freight.	Pasenger.	Total.	Way and structures.	inc. misc. equipment.	Traffic.	General.	Trans-	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decrease) comp. with last year.						
Duluth & Iron Range.....	272	\$4,442,656	\$127,843	\$4,621,700	\$379,878	\$5,605	\$944,057	\$59,985	\$1,881,142	\$2,740,558	\$254,704	\$2,516,345	-\$6,429	-\$6,429	-\$6,429	-\$6,429			
Duluth, Missabe & Northern.....	356	5,223,152	170,297	5,439,426	499,968	474,536	927,085	59,237	1,972,792	3,466,557	304,841	3,184,104	31,622	31,622	31,622	31,622			
Duluth, South Shore & Atlantic.....	627	911,661	551,978	1,582,666	411,297	179,500	558,440	3,673	1,246,557	3,36,049	90,000	233,674	15,170	15,170	15,170	15,170			
Duluth, Winnipeg & Pacific.....	181	632,825	123,559	727,229	162,192	87,190	275,985	2,727	1,663,228	209,001	38,623	176,378	85,754	85,754	85,754	85,754			
EI Paso & Southwestern Co.....	982	2,924,363	491,744	3,570,720	655,710	518,670	76,660	99,590	1,34,279	2,382,909	1,187,811	8,997	196,703	982,111	417,667	417,667	417,667		
Elgin, Joliet & Eastern.....	804	5,162,988	18	5,516,970	857,315	1,066,069	30,410	1,534,154	89,632	3,577,580	1,939,390	160,948	1,778,442	-\$78,166	-\$78,166	-\$78,166	-\$78,166		
Erie.....	1,988	17,171,042	4,538,651	23,502,160	3,272,814	4,239,966	552,508	7,816,058	53,628	16,412,004	7,090,156	86,875	766,926	6,236,345	-\$1,597,078	-\$1,597,078	-\$1,597,078		
Florence & Cripple Creek.....	87	432,435	119,766	557,232	1,577,967	390,847	319,829	11,348	143,065	21,902	261,511	10,143	251,368	12,407	12,407	12,407	12,407		
Florida East Coast.....	696	822,355	224,355	1,046,720	385,349	385,074	38,196	558,810	57,729	1,459,850	118,117	3,899	100,000	22,016	-100,150	-100,150	-100,150		
Fort Worth & Denver City.....	454	1,400,810	727,150	2,234,231	385,349	385,074	76,885	1,598,954	53,628	16,412,004	7,090,156	2,995	85,200	157,500	390,486	-312,189	-312,189		
Galveston, Harrisburg & San Antonio.....	1,338	3,669,601	1,330,991	5,267,620	533,603	994,438	172,887	2,029,794	166,314	3,908,076	1,359,544	13,642	296,289	1,049,613	-\$297,035	-\$297,035	-\$297,035		
Georgia Southern & Florida.....	307	960,348	406,024	1,460,342	163,803	231,179	58,864	646,483	44,321	1,144,650	315,692	147,764	300,982	5,156,860	205,846	205,846	205,846		
Grand Rapids & Indiana.....	578	1,352,815	1,001,881	2,345,764	347,958	325,069	67,288	1,050,692	82,542	202,810	55,930	119,694	146,880	9,318	9,318	9,318	9,318		
Houston, East & West Texas.....	347	1,841,000	1,077,500	2,908,500	3,104,341	387,782	560,566	118,250	1,958,954	82,622	2,548,174	556,167	8,181	157,500	390,486	-312,189	-312,189		
Great Northern.....	7,769	29,423,049	7,680,184	39,427,161	5,437,753	4,218,785	574,020	9,708,877	588,349	20,527,784	18,899,377	128,182	2,033,234	16,994,325	-\$13,471	-\$13,471	-\$13,471		
Gulf & Ship Island.....	308	655,152	183,217	895,152	5,997,465	912,999	161,041	13,982	41,044	1,144,650	340,812	149,952	345,860	5,156,860	484,525	484,525	484,525		
Gulf, Colorado & Santa Fe.....	1,596	4,219,440	1,422,772	5,642,212	1,078,282	137,050	132,426	40,429	1,203,034	158,222	4,299,358	1,698,107	274,162	1,433,945	53,551	53,551	53,551		
Hocking Valley.....	352	3,011,555	1,433,803	3,708,188	388,905	388,905	660,619	1,48,922	1,48,922	75,693	2,322,711	1,375,477	205,000	1,170,477	205,000	1,170,477	205,000		
Kanawha & Michigan Northern.....	177	1,777,501	1,777,501	3,540,392	92,949	92,949	9,992	1,598,954	20,836	435,433	164,674	8,181	29,683	134,991	-41,391	-41,391	-41,391		
Houston & Texas Central.....	789	9,266,346	3,185,343	12,451,689	3,98,059	575,062	75,962	1,341,256	88,075	2,333,346	515,997	143,343	1,327,307	5,101,529	427,004	427,004	427,004		
Illinois Central.....	4,763	18,988,000	6,087,936	28,607,657	4,391,402	6,454,718	531,784	171,573	14,345	650,935	22,164,478	6,443,179	18,938	30,770	25,873	118,305	118,305		
Indiana Harbor Belt.....	105	1,063,226	1,063,226	2,129,426	1,48,878	598,114	123,522	132,522	1,863,184	163,672	3,399,194	1,503,714	7,831	119,841	1,376,062	33,569	33,569		
International & Great Northern.....	1,160	3,470,026	1,063,529	4,533,529	1,504,395	1,504,395	1,504,395	14,322	433,363	34,678	1,024,263	480,132	7,831	48,820	431,887	58,523	58,523		
Kansas City Southern.....	827	3,293,813	19,034,665	21,361,665	4,515,352	423,237	553,074	135,165	1,475,204	172,008	2,758,688	1,756,664	8,181	203,565	1,553,999	-\$95,733	-\$95,733	-\$95,733	
Lake Erie & Michigan Southern.....	1,853	15,654,395	6,037,968	24,692,363	3,385,246	5,332,176	441,340	537,355	992,817	1,209,817	61,756	1,014,147	1,294,439	29,529	29,529	29,529	29,529		
Lehigh & Hudson River.....	97	994,438	24,066	24,066	26,213	1,66,788	123,506	123,506	123,506	177,282	285,399	22,132	646,028	840,000	2,963,138	2,963,138	2,963,138		
Lennig & New England.....	269	766,265	6141	792,324	116,648	105,478	11,134	197,496	18,466	301,246	666,897	251,465	961	22,250	147,985	58,585	58,585		
Lehigh Valley.....	1,438	15,131,514	3,877,440	18,009,519	2,088,311	3,155,791	429,186	6,026,466	343,331	12,043,085	6,026,234	97,334	616,000	3,734,900	-\$968,090	-\$968,090	-\$968,090		
Long Island.....	399	1,431,514	3,877,440	5,944,149	703,706	607,699	94,602	2,383,038	135,288	1,209,817	3,924,333	20,19,816	137,785	318,300	1,687,731	331,610	331,610		
Louisiana & Arkansas.....	279	571,182	118,639	713,823	128,384	105,955	12,572	126,691	12,572	285,399	285,399	22,132	66,331	840,000	235,077	235,077	235,077		
Louisiana Ry. & Navigation.....	351	658,922	128,133	837,652	128,133	165,577	97,177	32,445	334,985	30,233	666,897	177,235	961	22,250	147,985	58,585	58,585		
Louisiana Western.....	208	590,843	300,438	948,362	106,836	209,144	37,408	301,246	32,263	1,024,263	32,263	170,443	395	213,529	140,905	140,905	140,905		
Louisville & Nashville.....	4,923	19,034,257	5,824,713	26,452,686	4,111,720	5,204,070	533,380	87,223	1,524,851	513,525	19,133,777	7,318,909	1,732	753,042	6,567,599	131,212	131,212		
Louisville, Henderson & St. Louis.....	200	3,050,015	1,777,620	4,826,639	1,510,914	891,292	1,31,507	95,211	1,91,024	190,634	420,023	18,000	18,000	88,345	1,313,367	222,276	222,276		
Maine Central.....	1,207	3,470,026	1,777,620	5,248,650	1,510,914	891,292	1,31,507	95,211	1,91,024	190,634	420,023	18,000	18,000	88,345	1,313,367	222,276	222,276		
Michigan Central.....	1,298	9,267,145	3,321,820	13,929,264	1,735,385	2,456,099	2,711,926	348,735	6,266,404	261,202	33,128	1,381,592	10,740	237,285	70,447	10,348	10,348		
Midland Valley.....	373	519,456	209,232	745,459	157,146	157,146	157,146	2,711,926	15,031	2,031,592	12,115,052	31,120	31,120	395	1,177,726	1,177,726	1,177,726		
Minneapolis & St. Louis.....	1,586	3,066,001	4,718,473	606,639	586,614	87,223	1,524,851	98,740	2,904,177	1,314,177	1,732	1,732	1,732	196	171,259	1,142,901	-\$137,272	-\$137,272	
Missouri & North Arkansas.....	365	352,208	195,278	579,715	114,372	51,507	59,715	179,733	209,738	237,455	33,128	481,781	97,934	2,443	1,142,901	1,142,901	1,142,901		
Missouri, Oklahoma & Gulf.....	332	416,237	114,372	51,507	51,507	87,883	81,588	28,727	233,455	33,128	464,786	87,031	2,443	1,142,901	1,142,901	1,142,901			
Missouri, Oklahoma & Gulf Ry. Co. of Texas.....	319	51,631	2,298	55,528	4,301,030	14,648,497	2,268,490	1,739,515	5,316,515	484,600	10,176,427	4,472,070	65,576	623,611	3,782,883	-\$936,841	-\$936,841		
Minneapolis, St. Paul & Sault Ste. Marie.....	3,919	9,827,145	3,321,820	13,929,264	1,735,385	2,018,984	282,058	4,187,349	261,202	8,484,378	5,43,386	98,380	857	4,931,376	1,177,726	1,177,726	1,177,726		
Miss																			

REVENUES AND EXPENSES* OF RAILWAYS

FIVE MONTHS OF FISCAL YEAR, 1914—CONTINUED

Name of road.	Average mileage operated during period.			Operating revenues— Freight.			Maintenance— Way and Of inc. misc. structures.			Operating expenses— Traffic.			Net operating revenue (or deficit). Total.			Outside operations, net.	Taxes.	Operating income (or loss). comp. with last year.	
	Passenger.	Total.	Traffic.	General.	Total.	Trans- portation.	General.	Total.	Trans- portation.	General.	Total.	Trans- portation.	General.	Total.	Trans- portation.				
Norfolk & Western.....	2,036	\$1,670,870	\$2,258,130	\$19,654,449	\$2,408,439	\$4,971,772	\$300,985	\$6,108,314	\$13,166,615	\$6,487,834	\$8,230	\$640,000	\$5,839,604	-\$339,424					
Norfolk Southern.....	569	899,564	355,234	1,398,265	184,092	1,194,530	23,066	\$446,024	74,306	479,047	949	46,188	431,910	44,196					
Northern Central.....	472	4,221,184	1,187,336	5,389,321	695,529	5,756,982	135,303	4,989,690	1,741,57	5,082,631	1,221,697	221,697	691,574	287,848					
Northern Pacific.....	6,313	23,571,610	7,768,495	33,364,289	4,903,538	3,817,361	10,235,006	40,878	1,024,949	5,756,200	1,729,283	13,635,006	1,247,470	12,024,894	-1,021,336				
Northwestern Pacific Railroad.....	401	251,407	93,720	344,646	251,407	201,166	20,650	590,805	60,450	1,247,470	201,166	20,650	700,168	644,668	4,197				
Oahu Ry. & Land Co.....	101	379,053	130,566	542,526	47,962	37,878	3,169	113,012	23,874	225,895	316,631	-19,220	35,535	261,876	5,662				
Oregon Short Line Ry. & Nav. Co.....	2,049	7,620,744	2,335,239	10,633,417	1,289,776	1,209,668	193,995	2,492,416	265,697	5,450,952	5,184,465	-41,114	674,620	4,505,731	-459,421				
Oregon & Northern Texas.....	1,911	802,583	211,693	1,07,560	8,267,841	1,303,320	191,567	268,120	2,63,476	29,693	5,358	2,218,782	349,834	-56,163					
Pennsylvania Co.	1,751	22,636,661	4,654,820	30,109,800	4,208,631	5,484,287	1,25,453	191,496	13,569	31,919	682,754	388,806	-51,977	1,277,227	7,234,482	-1,717,313			
Pennsylvania Railroad.....	4,032	58,139,823	17,372,831	81,116,706	10,160,465	16,694,969	1,180,638	28,850,075	1,840,238	58,735	22,381,321	-78,967	3,191,211	18,401,143	-1,435,920				
Peoria & Eastern.....	3,352	1,031,685	336,031	1,476,432	1,193,866	1,312,226	29,563	29,238	1,34,564	341,868	1,34,564	285,564	56,000	168,116					
Pere Marquette & Reading.....	2,325	4,556,023	1,955,332	7,757,576	1,236,749	1,659,072	170,333	3,04,976	209,708	6,355,738	1,050,018	-17,675	248,998	753,345	-790,523				
Philadelphia, Baltimore & Washington.....	1,020	16,209,584	3,249,125	20,19,376	6,767,916	6,767,916	3,725,024	3,240,512	13,304,541	847,566	513,572	278,973	1,645,679	7,366,706	-1,773,252				
Pittsburgh & Lake Erie.....	7,326,019	851,197	8,427,722	8,074,197	1,618,853	857,54	2,037,668	143,138	15,759	15,759	15,759	-676	297,000	3,401,296	-967,050				
Pittsburgh, Cincinnati, Chic. & St. Louis.....	713	4,538,331	9,107,553	9,107,553	1,482,367	1,694,043	249,074	8,805	2,75,536	26,521	80,567	6,364	50,000	246,429	-213,505				
Port Reading.....	21	88	558,072	57,552	525,129	77,675	142,566	15,645	4,009	235,233	290,065	-3,288	41,093	336,142	-37,194				
Richmond, Fredericksburg & Potomac.....	282	592,441	355,534	1,131,343	123,608	123,608	249,074	249,074	15,645	433,094	92,637	380,523	15,297	484,125	4,527,390	327,709			
Rutland.....	468	882,430	179,450	1,749,259	185,502	320,671	52,283	621,302	29,904	1,209,742	539,517	690	85,631	454,576	30,966				
St. Joseph & Grand Island.....	319	509,793	166,212	1,733,638	146,551	1,069,959	29,584	295,584	31,870	1,206,297	127,341	-102	31,251	95,988	-12,726				
St. Louis & San Francisco.....	4,742	13,111,331	4,800,873	19,284,074	2,673,897	3,081,681	360,335	6,206,731	461,865	12,784,909	6,499,165	....	631,029	5,885,136	-76,988			
St. Louis, Iron Mountain & Southern.....	3,365	10,659,715	355,871	35,325	1,139,040	2,018,344	118,901	24,034	391,514	18,282	302,714	27,592	27,592	27,592	16,796				
San Antonio & Aransas Pass.....	724	498,565	123,007	851,989	188,056	63,539	2,722,759	32,665	846,149	846,149	846,149	757,915	28,000	95,380	-125,607				
St. Louis, San Francisco & Texas.....	244	19,535	844,774	3,588,208	3,311,377	682,376	143,264	828,514	136,589	2,119,220	1,468,988	-7,095	61,975	207,847	40,768				
St. Louis, Southwestern Ry. Co. of Texas.....	905	811	1,407,143	566,497	2,156,445	488,37	519,325	66,645	100,924	1,993,900	1,62,846	1,70,090	1,70,090	1,70,090	85,722				
San Pedro, Los Angeles & Salt Lake.....	1,133	2,754,247	1,354,186	4,419,293	561,834	750,058	108,532	162,244	1,469,237	92,637	3,035,970	1,383,323	12,130	200,519	1,170,674	-302,659	-244,187		
Southern Pacific Co.	6,435	24,778,372	13,735,382	41,596,966	4,357,486	7,394,328	2,722,759	32,665	846,149	846,149	846,149	757,915	243,207	1,216,336					
Spokane International.....	1,633	6,786,601	2,158,021	9,954,844	1,374,770	3,274,770	319,605	3,659,044	304,422	6,958,447	2,996,305	-6,605	60,000	697,915	-223,177				
Southern.....	7,036	19,593,361	8,388,226	29,87,649	3,971,116	4,852,492	910,892	10,141,974	856,911	1,739,385	9,136,664	26,567	1,063,175	8,100,056	-311,941				
Southern Kans. of Texas.....	281	311,042	177,330	530,424	120,422	11,901	224,658	173,045	11,901	224,658	91,710	....	34,061	173,933	-102,203			
Southern Pacific Bridge Terminal.....	9	471,106	85,628	1,247,322	2,71,971	2,71,971	108,532	4,566	466,257	18,282	393,459	195,369	22,971	133,300	310,864	-177,988			
Texas & New Orleans.....	458	1,138,471	545,959	1,797,073	4,357,486	7,394,328	283,206	417,981	40,078	11,230,386	1,161,474	23,214,986	717,165	2,049,258	17,058,887	-2,258,157			
Texas & New Orleans.....	1,885	5,139,897	2,031,097	8,203,943	1,069,508	1,241,900	247,518	183,952	3,191,024	205,832	5,886,721	2,317,388	9,130	106,266	255,576	-53,712			
Toledo, Portand & Seattle.....	556	1,353,297	265,679	3,355,995	303,907	185,100	42,103	544,288	65,998	1,214,396	1,214,396	4,571	267,000	952,170	-69,723				
Tennessee Central.....	294	493,184	203,034	737,320	14,760	76,016	28,336	252,206	36,404	538,922	198,386	....	21,436	177,154	13,462			
Terminal Railroad Ass'n of St. Louis.....	34	1,133	1,135	1,247,322	224,658	4,566	466,257	18,282	393,459	195,369	421,193	22,971	133,300	310,864	-177,988				
Texas & New Orleans.....	1,111	811,307	259,930	1,114,150	76,060	263,592	169,060	50,058	60,110	1,055,326	58,824	271,388	9,130	174,252	174,252				
Ulster & Delaware.....	129	211,403	247,518	2,783,877	1,482,188	1,544,297	144,778	1,22,429	1,043,834	49,144	2,149,600	1,39,882	175	28,985	29,839	-294,883			
Union Pacific.....	3,612	17,564,360	5,056,187	24,735,172	2,653,247	1,694,361	55,247	685,505	8,138	2,722,759	1,214,447	3,137,332	-1,203	40,000	142,563	-234,877			
Toronto & Baltimore.....	9	608,901	121,153	739,502	55,284	126,422	149,369	12,288	6,300	28,087	12,389	63,512	2,693	30,059	607,453	-22,925			
Union R. R. of Pennsylvania.....	31	2,309,451	287,697	508,164	287,697	81,263	6,309	855,568	15,910	1,639,848	649,603	14,881	62,000	612,484	-326,503			
Vandalia.....	910	3,481,330	1,147,217	5,169,925	968,663	968,663	1,12,281	1,12,281	1,12,281	1,12,281	1,12,281	1,12,281	1,12,281	1,12,281	1,12,281	1,12,281			
Vicksburg, Shreveport & Pacific.....	171	441,705	29,477	76,072,76	131,459	148,592	17,438	1,947,951	974,740	1,335,923	1,33,002	1,33,002	1,33,002	1,33,002	1,33,002	1,33,002	1,33,002		
Virginia & Southwest.....	240	731,182	85,485	839,732	83,732	112,281	187,652	28,653	28,653	1,232,700	19,628	276,666	1,235,580	38,113	107,495	154,580	174,823	-143,793	
Virginia & Tennessee.....	503	2,05,814	179,188	179,188	361,079	44,310	28,653	28,653	28,653	47,400	1,509,589	1,235,580	38,113	107,495	142,539	142,539	-143,793	</td	

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has further suspended from January 5 to July 5 certain schedules in a tariff of F. A. Leland, agent, which proposed to increase class and commodity rates on traffic moving between New Orleans and Brownsville, Tex.

The commission has further suspended from January 13 to July 13 certain items in tariffs of W. P. Emerson, agent, and F. A. Leland, agent, which proposed to increase rates on bananas from gulf ports to Lincoln and Beatrice, Neb., and Topeka, Kas.

The commission has further suspended from January 8 to July 8, a Union Pacific tariff naming increased rates on bananas and cocoanuts in carloads, from New Orleans, Port Chalmette, La., and Mobile, Ala., to points in Idaho, Oregon, Washington and Wyoming.

The commission has further suspended from January 5 to July 5, schedules in a tariff of F. A. Leland, agent, which proposed increases in class and commodity rates between Houston, Beaumont, Galveston, Port Arthur and other Texas points and points in Louisiana.

The commission has further suspended from January 3 to July 3, an item in a Grand Trunk tariff by which it was proposed to cancel the rating on high explosives, in carloads and less, from points on the Grand Trunk to points in central freight association and trunk line territories.

Prepared Roofing Rates

Patent Vulcanite Roofing Company v. Ahnapee & Western et al. Report by Commissioner Prouty:

Complaint is made against the practice of the defendants of maintaining a lower rate for the transportation of prepared roofing in rolls than for the transportation of the same article in sheets. The commission finds that there is an undue discrimination in the imposing of a higher charge for the transportation of the latter than of the former, and that for the future the rates on shingles should not exceed those on rolls. The prepared roofing in cartons, otherwise known as asphalt shingles, is the same article as prepared roofing in cylinders, except that it is packed in cartons instead of rolls. The value of the two articles is substantially the same; the service to which they are put is the same, and the cartons will load much heavier than the cylinders. (28 I. C. C., 610.)

Rates On Fuel Oil

Fairmont Creamery Company v. Atchison, Topeka & Santa Fe et al. Report by the commission:

Complaint is made against the rates for the transportation of fuel oil in tank cars from Sugar Creek, Mo., to Omaha, Crete and Grand Island, Neb. The commission finds that the complaint is justified and establishes lower rates between these points for the future, noting that fuel oil and such low grade products should travel at a much lower rate than that on petroleum and its products, rated fifth class in the western classification. (28 I. C. C., 661.)

Rates On Wagon Wood in the Rough and On Lumber

Sligo Iron Store Company v. St. Louis & San Francisco et al. Report by the commission:

Complainant shipped three carloads of tongues, bolsters, axles, plow beams, etc., from Fayette Junction, Ark., to Huntsville and Austin, Tex. The charges were collected at a rate of 35 cents per hundred lb., applicable to "wagon wood, plow beams and handles, bent felloes, in the rough, sawed to dimensions (not further finished)," whereas the rate on lumber is but 23 cents. The commission finds that rates lawfully applicable

under the tariff in force were collected but that until the carriers have promulgated a properly classified lumber list, free from unjust discrimination, it is unjust to force wagon wood and plow beams in the rough to bear higher rates than are imposed for like service upon many analogous manufactured wood articles which move at the lumber rate. (28 I. C. C., 616.)

Complaint Dismissed

Hull Vehicle Company v. Southern Railway et al. Report by the commission:

The defendants collected charges on a carload shipment of buggies from Dallas, Tex., to Savannah, Ga., at a rate of \$1.91 per 100 lb., which compares with a rate of 83 cents on the same commodity from Savannah to Dallas. The commission finds that the mere fact that the rate in one direction exceeds the rate between the same points in the opposite direction is not a controlling test of the reasonableness of the higher rate. The rates' disparity in this case is justified because of the considerable volume of traffic westbound, the desire of the defendants to place the complainant upon a favorable competitive basis, and the further fact that there is almost no movement of this traffic from Dallas to Savannah. (28 I. C. C., 619.)

Discrimination in Favor of Kansas City Removed

Omaha Grain Exchange v. Atchison, Topeka & Santa Fe et al. Report by Commissioner Clements:

The complainant alleged that certain of its members who had built elevators for the handling of grain in Omaha, South Omaha and Council Bluffs were being discriminated against in favor of dealers in Kansas City because of the practice of the defendants in erecting elevators at Kansas City, either leasing them to dealers there at an unduly low rental or operating them themselves, or through subsidiary corporations, and in giving certain free or preferred services to shippers using them and shipping out over the owning carriers' lines. As an appraisal of these elevators has since been made by disinterested persons, and as they will be leased to regular elevator companies at a rental based upon that valuation, the cause of the complaint is removed. The commission, therefore, enters an order for the dismissal of the complaint, subject, however, to any future investigation which it may desire to make on any phase of the matter. (28 I. C. C., 665.)

New Orleans, Storage Rules and Regulations

Report by Commissioner Prouty:

The respondents have been in the practice of allowing free time of 48 hours in the unloading of carload freight at New Orleans. A like period has been allowed for free storage in the freight sheds, except in the case of hay, grain, flour and other grain products and some other articles, which have been allowed 96 hours. It is now proposed to reduce the free time on the latter articles to but 72 hours. The commission finds that the reduction is justified except in the case of hay, which is handled under rather peculiar conditions. It also holds that certain increased storage charges proposed for the purpose of inducing shippers to remove their commodities more promptly from the freight sheds, which under the present scale of storage charges they are using as warehouses, is also justified. The carriers, however, will not be allowed to depart from the usual rule of excluding Sundays and legal holidays in computing the free time. Sundays and legal holidays may be properly included in reckoning the storage rate after the expiration of free time. (28 I. C. C., 605.)

Molasses Rates from Mobile, Alabama

Report by the commission:

The Mobile & Ohio, having published a rate of 15 cents per 100 lb. on low grade blackstrap, in tank cars, from Mobile, Ala., to East St. Louis, Ill., and St. Louis, Mo., complaint is made by competing carriers from New Orleans that the rate is too low for the service rendered and will therefore either prevent the shipment of the commodity from New Orleans or else com-

pel the competitors to reduce their rates to a point where they will yield inadequate revenue. Complaint is also made against a provision of the tariff which says that blackstrap when imported from Cuba must be unloaded into and reshipped from storage tanks, because there happens to be but a single storage tank in Mobile. The commission finds that the low rate is justified. It was so made in order that the manufacturers of animal foods, the largest users of this commodity, might be able to obtain an adequate amount for their ordinary usage. The tank was built in Mobile, in order that the rate might be taken advantage of, and as part of the plan to obtain an increased supply of the desired blackstrap from Cuba. The Mobile & Ohio has a right to establish such a rate as will bring business to it through the port at Mobile. Competitors through New Orleans may be put at a disadvantage, but there is nothing in the act to regulate commerce which prohibits disadvantage brought about in such manner. The rate of 15 cents, however, must also be made applicable to blackstrap unloaded from vessel to car direct and whether imported from Cuba or not. (28 I. C. C., 666.)

Reconsignment of Coal at Milwaukee

Charles Becker, trading as Wisconsin Coal Company, v. Pere Marquette, et al. Report by Commissioner Meyer:

Complainants, coal brokers at Milwaukee, were in the habit of shipping coal from Pennsylvania, etc., to Milwaukee, for destination beyond. The Pere Marquette engaged largely in this business, receiving coal at Toledo, moving it to Ludington, Mich., and carrying it on its car ferries across to Milwaukee, where it made connection with the St. Paul by means of interchange tracks holding about 200 cars. In the past the complainants have had the privilege of reconsigning cars at Milwaukee without charge. In the fall of 1912, however, the Pere Marquette said that thereafter coal would have to be reconsigned at Ludington, and that a charge of \$2 per car would be levied unless reconsigning orders were given at that point prior to the arrival of the cars. Several cars arrived, on which the complainant refused to give reconsigning orders unless they were taken to Milwaukee. Demurrage charges accrued which the complainant paid, but which it now seeks to re-obtain. The commission finds that while the carrier may, as a matter of convenience, when its terminal tracks are congested, hold cars at some point short of destination, provided such a course involves no disadvantage to consignee; that in this case there was no such congestion and there was actual disadvantage to the consignee because he was unable to inspect the cars at Milwaukee. Reconsignment, if afforded at Ludington, could not be looked upon as adequate or satisfactory service. The commission cannot find that a contract, in which cars, having arrived on the interchange track at Milwaukee, were termed St. Paul cars, is a valid objection to the Pere Marquette affording the service of reconsignment. The commission also finds that if the coal dealers have proper notice and are unable to give reconsigning orders before the cars reach the re-consigning point, it is entirely just and reasonable that they should pay the charge for reconsigning service. On the other hand, if the defendant, for its own convenience, on account of congestion at Milwaukee, holds cars at Ludington, that is a matter for which it cannot reasonably charge the shipper. The commission is unable to award damages for tort injuries in that the cars were held at Ludington; the complainant did not use reasonable diligence to avoid or minimize his loss. It is found, therefore, that the demurrage charges assessed should be refunded. In the case of cars which arrived at Ludington before the receipt of passing notice and proper time for giving disposition orders, the charges paid were improperly assessed and should also be refunded. There is no evidence upon which to measure damages, as to the cars on which the notice was sufficient. Damage regarding these lies in the difference between the value of the reconsignment service at Milwaukee and at Ludington. The commission rules that tariff provisions with regard to the giving of passing notice at Toledo should be made. If, after the receipt of such notice, shippers fail to give disposition orders before the cars reach Milwaukee, they shall be charged for the service \$2 per car; otherwise the service is to be free. (28 I. C. C., 645.)

STATE COMMISSIONS

The Illinois Public Utilities Commission has asked the railways of the state to file a detailed statement of the conditions at grade crossings on their lines.

The Pennsylvania Public Service Commission has issued an order requiring all railroads to provide in each car of every passenger train a suitable supply of drinking water, with sanitary drinking cups.

The California State Railroad Commission has ordered a reduction in the rate for the transportation of cotton from points in the Imperial Valley to San Pedro and Los Angeles, from 62 cents and 50 cents per 100 lb. to 40 cents.

The Iowa Railroad Commission has announced its intention of revising the Iowa classification and distance tariffs this year and has asked the railways to keep a detailed record of waybills for the first 10 days of March, July, September and November.

The Railroad and Public Service Commission of Montana has ordered extensive reductions in the rates for the transportation of freight from the principal wholesale centers in the state. The reductions are to become effective January 17 and are said to average 26 per cent. under the rates now in force.

The Railroad Commissioners of Tennessee have forbidden an advance in freight rates proposed by the Cincinnati, New Orleans & Texas Pacific, the Southern and the Louisville & Nashville. The proposed tariffs had to do with the transportation of agricultural implements from Harriman to Chattanooga and Knoxville.

The Public Service Commission of New Hampshire has authorized an increase of freight rates on the Boston & Maine. This action of the commission is in pursuance of the terms of a special act passed last year. The commissioners say that heretofore Massachusetts has not borne a fair share of the rate burden on the Boston & Maine.

The Illinois Public Utilities Commission has suspended until February 23 a general advance in grain rates in Illinois, which had previously been suspended by the old railroad and warehouse commission. The Interstate Commerce Commission had suspended a corresponding increase in interstate rates, but had allowed the proposed rates to go into effect on January 8.

The order of the Texas railroad commission requiring the Gulf, Colorado & Santa Fe to stop its fast passenger trains at Meridian, county seat of Bosque county, has been sustained by the third court of appeals and a fine of \$22,400 imposed. The railroad claimed exemption on the ground that the trains carry interstate passengers. The suit will go to the court of last resort, as on the outcome of the case depends an important power of the railroad commission.

The engineers of the Michigan State Railroad Commission have reported that sixteen bridges and trestles on the Detroit, Toledo & Ironton are in dangerous condition; and the commission has ordered that trains running over these bridges must move not more than six miles an hour. The commission has authorized the receiver to continue the running of the trains only on condition that he takes measures to correct dangerous conditions and notifies the commission every two weeks of the amount of progress made.

The railway commissioners of Canada have issued an order, to take effect February 1, reducing rates for the transportation of packages by express, applying throughout the Dominion, on packages weighing 7 lb. or less. Reductions have been ordered also in the rates to be charged for carrying bills of lading and for the collection of money thereunder. Under the new rule a charge of one-eighth of 1 per cent. with a minimum of 1 per cent. on one company's line and 1½ per cent. when carried by more than one company will be made. The reduction is a substantial one as the present charges vary from \$3 on \$100 to \$20 on \$2,000.

A meeting of the state commissions of Arizona, Nevada, Idaho, Montana, Colorado and New Mexico was held with representatives of the express companies at the office of the

Colorado commission at Denver on January 9 for the purpose of arriving at a uniform plan of stating express rates for intrastate shipments in the various states of the fourth zone of the Interstate Commerce Commission's express plan. An agreement was reached to apply, with some changes, the modification of the interstate commission's system of block and sub-block rates as outlined by a committee of the National Association of Railway Commissioners at Chicago in December. This will reduce the present package rates for all distances within the zone and the express companies agreed to make exceptions in cases of circuitous routing as well as further reductions in the 100-lb. rates for short hauls which are increased by the commission's plan.

PERSONNEL OF COMMISSIONS

William J. Wood, of Evansville, Ind., formerly chairman of the Railroad Commission of Indiana, has been appointed a special examiner for the Interstate Commerce Commission.

O. F. Berry, late chairman of the Illinois Railroad and Warehouse Commission, has been appointed a special examiner for the Interstate Commerce Commission.

COURT NEWS

The Supreme Court of the United States has declared void the ordinance of New York City, regulating the operation of express wagons, insofar as it relates to wagons engaged in interstate commerce. The suit on which this decision is made arose at the time of a strike of expressmen in Jersey City and Hoboken about three years ago, when the police regulations of New York City were enforced in such an arbitrary manner as to interfere with the operations of express wagons between New York and New Jersey.

Judge Smith McPherson, of the Federal Court at Kansas City, Mo., on January 10 enjoined the attorney-general of Missouri from proceeding in the state courts with suits against the railroads to recover the amounts of freight and passenger rates collected during the litigation of the state rate cases, in excess of the rates finally sustained. The court also took the case under advisement for three weeks. This action followed a demand from Attorney General Barker that the court issue a final decree in the original case. Mr. Barker's argument was accompanied, in open court, by a severe attack on the judge as a "policeman for the railroads."

The appellate division of the Supreme Court of New York (not the highest court in the state) in a decision issued January 14, sustained the increased single-trip and commutation passenger fares of the New York Central and the New York, New Haven & Hartford between New York City and suburban points, annulling the order of the Public Service Commission, Second district, which, last February (*Railway Age Gazette*, February 14, p. 295) ordered the rates restored to the bases formerly in effect. The increases were made by the roads in 1910. After the issuance of the commission's order in 1913 the roads took the matter to the court; and since that time they have been giving to every passenger a rebate check, the value of the checks being contingent on a final court decision favorable to the roads.

BONUS TO IRISH RAILWAY EMPLOYEES.—The past year has been one of the most prosperous in the history of the Great Northern Railway of Ireland. The directors, to mark their recognition of the staff's devotion to duty during a period of extreme pressure, have voted a sum of nearly \$50,000 to be distributed among the staff in the form of bonuses.

ELECTRIFICATION PROGRESS IN ITALY.—The Italian State Railways have now electrified the Mount Cenis tunnel and part of the railway line. They are now at work on the tunnels north of Genoa, and plan electrification at the stations of Genoa and S. Pierdarena. Double tracking is also being carried on on the line between Genoa and Spezia. The latter construction necessitates the perforation of about 31 miles of mountain with viaducts and bridges along the Tyrrhenian shore, through hills which extend almost perpendicularly to the sea without valley or beach.

Railway Officers

Executive, Financial, Legal and Accounting

Howard L. Ingersoll, assistant to senior vice-president of the New York Central Lines at New York, has been appointed assistant to president, with headquarters at New York.

Edgar A. Richard has been appointed acting auditor of the Pacific & Idaho Northern Railway and the Central Idaho Telegraph & Telephone Company, with headquarters at New Meadows, Idaho, succeeding E. A. Chavannes.

Joseph Wood, first vice-president of the Pennsylvania Lines West of Pittsburgh, and president of the Vandalia Railroad, the Grand Rapids & Indiana and the Cleveland, Akron & Cincinnati, with headquarters at Pittsburgh, Pa., and a director of the Pennsylvania Railroad Company, and a number of other companies in the Pennsylvania System, has tendered his resignation as executive of the western lines, to take effect February 1. Mr. Wood has been in railway service nearly 50 years, serving in the engineering, operating and traffic departments of the Pennsylvania system, and for the past few years has been considering retiring from the active duties of railway management. He was born on June 5, 1846, at Haddonfield, N. J., and graduated as a civil engineer from the Pennsylvania Polytechnic College in 1864. In the autumn of the same year he began railway work as a rodman with a construction corps building the Connecting Railway at Philadelphia, Pa., and from 1867 to 1869 was assistant engineer in the same service. He then became resident engineer of the Northern Central. From May, 1872, to May, 1878, he was resident engineer of the Baltimore & Potomac and engineer of the Northern Central, and was then made assistant to the superintendent of motive power of the Pennsylvania Railroad at Altoona, Pa. In November, 1881, he became superintendent of motive power of the Pennsylvania Company and on November 1, 1887, was appointed general superintendent of transportation of the Pennsylvania Company, the Pittsburgh, Cincinnati & St. Louis and the Chicago, St. Louis & Pittsburgh. On March 1, 1890, he became general manager of the Pennsylvania Lines West of Pittsburgh. He was elected fourth vice-president in January, 1896; in September, of the following year, he was made third vice-president, and from January, 1902, to January, 1907, was second vice-president of the same lines. From January, 1905, to January, 1907, he was also first vice-president of the Vandalia and on the latter date became first vice-president of the Pennsylvania Lines West of Pittsburgh, and president of the Vandalia Railroad, the Grand Rapids & Indiana and the Cleveland, Akron & Cincinnati.

Operating

E. W. Sandwich, car accountant of the Atlanta & West Point and the Western Railway of Alabama, at Montgomery, Ala., has been appointed superintendent of car service, with office at Atlanta, Ga.

G. A. Coleman, yardmaster of the Chicago, Peoria & St. Louis, has been appointed acting trainmaster, with headquarters at Springfield, Ill. The office of superintendent, heretofore held by T. H. Pindell, is abolished.

W. D. Scott, general superintendent of the Great Northern at Seattle, Wash., has been appointed general superintendent of the Spokane, Portland & Seattle and the Oregon Trunk, with headquarters at Portland, Oregon, to succeed J. Russell, resigned to accept service with another company.

R. S. Goodrich has been appointed transportation inspector of the Atchison, Topeka & Santa Fe Coast Lines, in charge of territory between Albuquerque, N. Mex., and Needles, Cal., with headquarters at Winslow, Ariz., succeeding W. R. White, assigned to other duties. Effective February 1.

F. R. Bartles, whose appointment as superintendent of the Fargo division of the Northern Pacific has already been announced in these columns, is 38 years old. He was educated at

Lehigh University, and subsequently was employed by the Pennsylvania Railroad for three years. He was later with the New York Central as supervisor of track for four years, and from 1905 to 1907 was assistant engineer for the Isthmian Canal Commission. He then went to the Northern Pacific, with which road he has remained ever since. Previous to his recent appointment as division superintendent at Dilworth, Minn., he was trainmaster at Pasco, Wash.

Rush R. Harris, who has been appointed superintendent of freight transportation of the Cleveland, Cincinnati, Chicago & St. Louis, the Peoria & Eastern and the Cincinnati Northern, with headquarters at Indianapolis, Ind., as announced in our issue of January 9, was born August 20, 1867, at Little Sandusky, Ohio. He was educated in the grammar and high schools of Galion, Ohio, 1873-1885, beginning railway work in April of the latter year with the Cleveland, Columbus, Cincinnati & Indianapolis. From August, 1886, to September, 1889, he was telegraph operator on the Cleveland division, and was then local agent at Greenwich, Ohio, until June, 1899, when he was transferred to Muncie, Ind., in a similar capacity. In August, 1902, he was made local agent at East St. Louis, Ill., and in April, 1907, was advanced to car accountant, which position he held until his recent promotion to superintendent of freight transportation, as above noted. Mr. Harris' entire railway service has been with the Cleveland, Columbus, Cincinnati & Indianapolis and its successor, the Cleveland, Cincinnati, Chicago & St. Louis.

Traffic

Robert T. Gourley has been appointed freight solicitor of the Star Union Line at St. Paul, Minn., in place of John J. Fee, resigned.

C. D. Whitney, general freight agent of the Chicago, Peoria & St. Louis, has been appointed traffic manager, with headquarters at St. Louis, Mo.

Harry C. Wilmot has been appointed agent of the freight department of the New York, New Haven & Hartford, with headquarters at Bridgeport, Conn.

F. L. Hanna has been appointed general agent of the Atchison, Topeka & Santa Fe Coast Lines at Oakland, Cal., succeeding J. J. Warner, deceased.

P. H. Scanlan has been appointed division freight and passenger agent of the Northern Montana division of the Chicago, Milwaukee & St. Paul, with headquarters at Great Falls, Mont.

W. L. Stannard, general agent freight department of the Chicago & North Western at Detroit, Mich., has been appointed general agent of both freight and passenger departments.

A. J. Fox, general agent of the freight department of the Seaboard Air Line at Baltimore, Md., has been appointed assistant general freight agent, with headquarters at Jacksonville, Fla., succeeding B. C. Prince, promoted.

T. P. Wade, soliciting freight agent of the Central of Georgia at Columbus, Ga., has been appointed commercial agent with office at Columbus, succeeding S. M. Wellborn, resigned to engage in other business, and O. P. Jenkins succeeds Mr. Wade.

James P. Orr, assistant freight traffic manager of the Pennsylvania Lines West of Pittsburgh, with office at Pittsburgh, retired on December 31 under the rules of the pension system after 48 years of service with the Pennsylvania Lines at the age of 70.

Garnett King, general agent of the El Paso & Southwestern, at St. Louis, Mo., has been appointed general passenger agent, with headquarters at El Paso, Tex., and G. W. Feakins, assistant to general traffic manager, at Chicago, has been appointed general agent, with headquarters at St. Louis, succeeding Mr. King.

C. E. Müller, contracting freight agent of the Seaboard Air Line at Baltimore, Md., has been appointed general agent of the freight department, with office at Baltimore, succeeding A. J. Fox, promoted. J. D. Dawson, soliciting freight agent at Baltimore, succeeds Mr. Müller, and Charles E. Thomas, Jr., succeeds Mr. Dawson.

Engineering and Rolling Stock

A. D. Millard, roadmaster of the Chicago, Peoria & St. Louis at Jacksonville, Ill., has been appointed engineer, with headquarters at Springfield.

Special

J. J. Hronik has been appointed traveling agent of the land and industrial department of the Southern Railway, with headquarters at Denver, Col., succeeding H. R. Buckey, promoted.

OBITUARY

W. B. Linsley, formerly for many years division superintendent of the Chicago & North Western at Escanaba, Mich., died at his home in that city on January 10.

June A. Wentz, formerly for many years general agent of the Chicago, Rock Island & Pacific at Chicago, died at his home in that city on January 11, aged 72 years. Mr. Wentz was born at Binghamton, N. Y., and had been in railway service since 1858. His connection with the Rock Island began in 1880 as agent at Kansas City, Mo.

Edmund C. Leavenworth, general freight agent of the Grand Rapids & Indiana, died at his home in Grand Rapids January 5, aged 61 years. Mr. Leavenworth had been connected with the Grand Rapids & Indiana since September, 1871. He was successively station agent, traveling freight agent, claim clerk and chief clerk, until April, 1889, when he was made general freight agent.

Harry Jerome Neff, general freight and passenger agent of the St. Louis, Brownsville & Mexico, with headquarters at Kingsville, Tex., died at Houston, Tex., January 9 at the age of 35 years. Mr. Neff began railway work in September, 1897, with the Chicago, Burlington & Quincy in the local freight office at Aurora, Ill. Six years later he went to the St. Louis Southwestern and was successively rate clerk, traveling freight agent and local agent until April, 1908. He became connected with the St. Louis, Brownsville & Mexico in June, 1909, as commercial agent and in September, 1912, was appointed general freight and passenger agent.

E. F. Ackerman, assistant engineer of the Lehigh Valley at New York, died on December 26 at Johns Hopkins University hospital, Baltimore, Md. Mr. Ackerman entered the service of the Lehigh Valley on July 23, 1896, as a draughtsman and through steady promotion rose to be assistant engineer in June, 1902. He had charge of the construction of the Irvington branch, the preliminary service and the construction work of the Lehigh & Lake Erie Railroad, the Greenville & Hudson viaduct, the Hayes Creek, the Buck Mountain branches, the preliminary service, etc., of the Seneca Falls branch, the construction of the grain elevator at Communipaw, the Johnson avenue yards in Jersey City and the Newark passenger station. For the past few months Mr. Ackerman has been in charge of work in connection with the company's Buffalo terminal improvements.

William F. Berry, formerly vice-president of the Boston & Maine in charge of traffic, died on January 8, at his home in Winchester, Mass. He was born on February 2, 1844, at Biddeford, Maine, and began railway work on May 1, 1864. He was successively station agent, freight and ticket clerk on the Eastern Railroad to May, 1866; then, for about six years, he was station agent. From April, 1872, to June, 1874, he was assistant general freight agent, becoming general freight agent on the latter date. On January 1, 1885, he was appointed assistant general freight agent of the Boston & Maine, the Eastern Railroad having become a part of that system. From March, 1889, to May, 1892, he was general freight and passenger agent of the Boston & Maine system, including all leased lines and branches; also general freight agent of the St. Johnsbury & Lake Champlain, and from February 1, 1892, also chairman of the executive committee of the Rome, Watertown & Ogdensburg Fast Freight Line. From May, 1892, to December, 1895, he was general traffic manager of the Boston & Maine. He was then made second vice-president, with authority over the traffic department. He was retired on June 1, 1913, after a service of almost 50 years with the Boston & Maine system.

Equipment and Supplies

LOCOMOTIVE BUILDING

THE CHESAPEAKE & OHIO is inquiring for 10 Mikado type locomotives.

CAR BUILDING

THE VIRGINIAN is inquiring for 1,000 gondola cars.

THE UNION TANK LINE is in the market for 500 tank cars.

THE CAROLINA, CLINCHFIELD & OHIO is inquiring for coal cars.

MORRIS & CO., Chicago, have ordered 200 refrigerator cars from the Haskell & Barker Car Company.

THE ILLINOIS CENTRAL has ordered 100 express refrigerator cars from the American Car & Foundry Company.

THE HOCKING VALLEY has ordered 1,000 freight cars from the Cambria Steel Company. This item has not been confirmed.

SWIFT & COMPANY, Chicago, are in the market for 200 all-steel double deck stock cars.

THE KANAWHA & MICHIGAN has ordered 1,000 all-steel general service cars from the Ralston Steel Car Company.

THE LIVE POULTRY TRANSPORTATION COMPANY, Chicago, has ordered 240 live poultry cars from the Haskell & Barker Car Company.

THE GRAND TRUNK has ordered in addition, to the other cars noted in this column recently, 17 first-class coaches and 15 baggage cars from the Osgood Bradley Car Company; 40 first-class coaches and 15 suburban cars from the Canadian Car & Foundry Company; 5 baggage cars and 11 coaches from the American Car & Foundry Company; 5 parlor and 4 dining cars from the Pullman Company and 5 postal cars from the Pressed Steel Car Company.

IRON AND STEEL

GENERAL CONDITIONS IN STEEL.—The steel market, on the whole, has seen a change for the better on the advent of the new year. There are so many factors involved, however, that it is hard to decide whether the indications are that there will soon be a very decided improvement or not. It was naturally to be expected that there would be some quickening of activity following the dullness of the holidays; buyers, including the large percentage who have been buying recently for temporary needs, were obliged, as one might say, to get caught up again. There are, however, some favorable signs. Several of the large railroads, such as the New York Central, for example, have at last placed their rail orders for 1914 requirements. One does not hear now that mill after mill is being closed down. The reports, on the contrary, indicate that several which have been idle are now commencing operations again. There is also to be noted the fact that on some lines the manufacturers are taking contracts for the future at increased prices only. This may or may not be a good sign. It may be simply the result of experience. The mills do not wish to be tied up now with low-priced contracts, when they might just as well as not wait, possibly, for better orders to be placed in the future. Nevertheless, one can obtain much more encouragement from the general conditions than one could a few weeks ago.

NEW RAILWAY FOR PERU.—It is reported that an agreement has been made between the Peruvian government and an English engineer for the construction of a railway connecting Cuzco with the Pacific coast. This railway will be of greatest importance, for it will open up for exploitation one of the richest provinces for rubber, cocoa, and other vegetable products. It is hoped to finish the railway in 1915.

Supply Trade News

Edward J. Williams, former disbursing officer of the Panama Canal and treasurer of the Canal Zone, has been elected treasurer of McCord & Co., Chicago, Ill.

The officers and salesmen of Berry Brothers, Detroit, Mich., held their annual convention at Detroit last week. During the convention a daily newspaper "The Luxeberry Daily News" was published, describing the various events of the meeting.

An important improvement has been made in the Absolute lock nut manufactured by the American Lock Nut Company, Pullman, Ill., which was described in the *Railway Age Gazette* of December 19. The locking pin, which has heretofore been a separate part, is now made integral by the addition of a simple retainer which holds the pin in its proper position.

The Rock Island Lines have recently awarded contracts to the Raymond Concrete Pile Company, New York, for approximately 200,000 lineal feet of Raymond concrete piling for foundations of retaining walls, abutments, etc., in connection with the track elevation work at Chicago. The Spokane, Portland & Seattle has adopted Raymond concrete piles for foundations of abutments near Cooks, Wash.

Elmer E. Allbee resigned from his position as mechanical superintendent of the Safety Car Heating & Lighting Company, New York, on January 1. Mr. Allbee graduated from the University of Vermont in 1889. He entered the employ of the Safety Car Heating & Lighting Company in 1890, and has held the position of mechanical engineer and mechanical superintendent for the last 11 years.

The tenth annual convention of the sales and factory organizations of the Chicago Pneumatic Tool Company was held last week at the Great Northern hotel, Chicago. About one hundred of the company's representatives were in attendance from all parts of the world. Morning, afternoon and evening sessions were held and demonstrations and tests of new tools were made. President W. O. Duntley was the host at a banquet at the close of the convention on Saturday evening at the Great Northern hotel. The business of the company is in exceptionally flourishing condition, the sales for 1913 having exceeded those of any previous year since the organization of the company.

The Pullman Company has announced the establishment of a pension plan providing for the retirement of employees at the age of 70 or after 20 years of service in case of disability with a pension equal to one per cent. for each year of service of the average rate of pay for the last year of service. No one over 45 years of age will be taken into service hereafter except by special arrangement. The pension plan will be administered by a board of pensions, consisting of Richmond Dean, general manager, chairman; William Hough, auditor; Leroy Kramer, assistant to the president; L. S. Hungerford, general superintendent, and L. S. Taylor, treasurer. The company has about 33,000 employees.

B. S. McClellan, who for several years has had charge of the railway sales department of the McCord Manufacturing Company, Chicago, has resigned active connection with this company in order to give more personal attention to his other interests. A new company which he has just organized, the McClellan Nut Company, Chicago, will shortly place upon the market a one-piece self-locking nut, which will be known as the "Unit" lock nut, and which will do away with the use of the additional lock nut, thereby making possible the use of a shorter bolt. Mr. McClellan has had years of experience in the railway field, and is the inventor of over 30 improvements connected with car and locomotive work, many of which are standard on the largest systems in this country. He was for seven years general foreman of the New Orleans terminals of the Illinois Central in charge of both locomotive and car departments. He was at one time also general foreman of the passenger car department of the New York Central lines at West Albany, N. Y., and had been also master car builder of the Fort Worth & Denver City, Ft. Worth, Tex.

TRADE PUBLICATIONS

CHICAGO, ROCK ISLAND & PACIFIC.—The passenger department has issued an attractive illustrated booklet describing the Golden State Limited train.

MECHANICAL RUBBER Goods.—Jenkins Bros., New York, have recently issued a little booklet describing the company's line of discs, pump valves, packing, gaskets, and other mechanical rubber goods.

WATER TOWERS.—The Chicago Bridge & Iron Works, Chicago, Ill., has issued a new illustrated catalogue for 1914 describing its steel water towers, including both elliptical and hemispherical bottom tanks.

DENVER & RIO GRANDE.—The January issue of the Denver & Rio Grande descriptive folder has been enlarged to include a running description of the towns, scenery and attractions located along the line of the Western Pacific in Utah, Nevada and California. The points of interest in and about Oroville, Marysville, Sacramento, Stockton, Oakland and San Francisco are prominently featured. Travelers, even though they do not stop off short of their destination, will learn much from the description of the attractions and resources of the country through which they pass. A profile map showing the elevation from sea level at San Francisco to the summit of the Sierras at Jasper, Nev., altitude 5,878 feet, is one of the features of the descriptive timetable.

ELECTRIC FANS.—The General Electric Company is just distributing bulletin No. A 4197, its annual catalog of electric fans. This catalog illustrates and describes the company's line of fans for the present year. While technical data have been intentionally omitted, the catalog contains sufficient information to enable customers to order intelligently. The publication is devoted to fans for table, wall and ceiling mounting, and describes also small ventilating outfits. Other recent General Electric bulletins deal with the form B belt-driven alternators; small plant direct current switchboards and railway motor gears and pinions. The various bulletins of this company are always well illustrated and attractive, but that dealing with electric fans is especially to be commended.

BAGGAGE ALLOWANCE ON BRITISH RAILWAYS.—The South Eastern & Chatham has recently established a free allowance for passengers' baggage of 150 lb. first class, 120 lb. second class and 100 lb. third class.

ELECTRIC RAILWAYS IN CHINA.—At the present time only four cities in China have electric street railways, and of the four, three are only nominally in China. At Shanghai, the International Settlement Street Railway, an English company, carries about 40 million passengers a year on its nine miles of double and seven miles of single track. The French Concession Street Railway, a French company, operates in the same city, and in 1912 carried about 12 million passengers on its 10½ miles of line. The Inland Electric Company is a Chinese company of very recent origin, which expects to operate about five miles of line also in Shanghai. At Tientsin there is a Belgian company operating about 7¾ miles of line and carrying about 25 million passengers a year, which serves a part of the native city and several of the foreign concessions. The entire line is double tracked and on a large portion of it cars are operated at three minute intervals. The only street railway in Hong Kong is a British one, and operates only in the British colony. The Japanese maintain a railway at Dairen in South Manchuria. It is to be noted that in nearly every case the electric lines are operated by others than Chinese. All but one operate through the foreign concessions and have a large European patronage. The Chinese, however, make up the larger portion of the passengers and it is their desires and needs that must be met. Two other cities also have light transportation systems. Nanking, a real Chinese city, has a light steam railway, 7½ miles long, providing facilities for a small part of the city, over which two locomotives run at irregular intervals. At Mukden, in Manchuria, there is a five mile horse car line; but it is proposed to electrify that when the necessary funds can be secured.

Railway Construction

ALBUQUERQUE, CORTEZ & SALT LAKE.—A line will probably be built by this company from Cortez, Colo., north via Grand Junction to Mack, about 145 miles. W. K. Palmer, engineer, Kansas City, Mo.

ARIZONA EASTERN.—See Southern Pacific.

AROOSTOOK VALLEY.—See Quebec Extension.

BIRMINGHAM & CHATTANOOGA.—A contract has been given to Gordon & Philips, Birmingham, Ala., it is said, for grading work on 10 miles from Boaz, Ala., towards Chattanooga, Tenn. The company was organized some time ago to build from Birmingham, Ala., northeast via Boaz, to Chattanooga, Tenn., about 140 miles. J. M. Spradlin, president and treasurer, Boaz; W. W. Shortridge, vice-president and secretary, Boaz, and P. S. Milner, locating engineer, Birmingham. (March 8, p. 453.)

GRAND MARAIS & NORTHWESTERN.—An officer writes that contracts are let and work is now under way, building from Grand Marais, Minn., west to Ely. The work involves handling about 15,000 cu. yds. to the mile. Maximum grades are to be 1 per cent. and maximum curvature 4 degrees. The company expects to develop a traffic in iron ore and forest products. Arthur Mitchell, president, Duluth, Minn. (Jan. 2, p. 50.)

GULF & BAY.—Incorporated in North Carolina with \$10,000 capital, it is said, to build from Belva, N. C., northeast to Carmen, about 10 miles. The incorporators include A. G. Betts and B. Starbuck, Stackhouse, North Carolina, and W. N. Garrett, Hot Springs.

LEHIGH & SOUTHERN.—An officer writes that a contract has been given to the Lehigh Stone Company, Kankakee, Ill., to build from Lehigh, on the Chicago, Indiana & Southern, south to a point two miles west of Irwin, on the Illinois Central, 4.25 miles. The work involves handling about 3,500 cu. yds. to the mile. The principal commodities the line will carry are stone from the quarries and grain; M. J. Edgeworth, president, Kankakee.

MANSFIELD RAILWAY AND TRANSPORTATION.—Work on the extension of this road is nearing completion, it is said, from Mansfield, La., east to Naborton, about 10 miles. The company now operate 14 miles of road from Hunters, La., northeast to Mansfield. (June 27, p. 1631.)

MARYVILLE-KNOXVILLE INTERURBAN.—A contract has been given to R. B. Oliver, Maryville, Tenn., it is said, to build from Maryville north to Knoxville, 16 miles. M. L. Butler, president, Chicago; J. F. Shea, vice-president, Knoxville, Tenn.; J. N. Clark, secretary, and N. Berger, treasurer, both of Maryville. (July 18, p. 132.)

MINNEAPOLIS & CENTRAL MINNESOTA (Electric).—Surveys have been made on a 25-mile section, it is said, of a line to be built between Minneapolis, Minn., and Dayton, and grading work has been completed between Robbinsdale and Champlain, 12 miles. Construction work is to be started next spring on a section of 66 miles to complete the line to St. Cloud. E. G. Potter, president, 433 Andrews building, Minneapolis.

MINNESOTA NORTHWESTERN (Electric).—Surveys have been made, it is said, for a 105-mile line from Thief River Falls, Minn., west. H. W. Protzeller, chief engineer, Thief River Falls.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, has awarded the contract for Section No. 2 of Routes Nos. 4 and 38, the Seventh avenue subway in the borough of Manhattan, to the Degnon Contracting Company, for \$3,059,522. This section lies in Greenwich street, West Broadway and Varick street, between Vesey and Beach streets.

ORANGE-NORTHEASTERN.—According to press reports a contract has been given to the Calcasieu Construction Company, Lake Charles, La., for building the section between Vinton, La., and Starks. The plans call for building Orange, Tex., in a general

northeast direction along the east side of the Sabine river to Merryville, La., thence via Leesville to Natchitoches. A contract was let last year to J. Tansey, St. Louis, Mo., for some of the work. J. A. Prudhomme, president, and A. R. Carver, chief engineer, Natchitoches, La. (May 29, p. 1206.)

PHOENIX & EASTERN.—See Southern Pacific.

QUANAH, ACME & PACIFIC.—This company is making plans to begin construction work soon on the extension from Roaring Springs, Tex., west to Plainview. Residents of Plainview have subscribed \$100,000 to secure the right of way from the Floyd county line, also terminal facilities in Plainview and for a cash donation, in aid of the project. (December 5, p. 1099.)

QUEBEC EXTENSION (Electric).—Construction work is to be started next spring, it is said, from Washburn, Maine, which is on the Aroostook Valley, west through the northern part of Maine to a point in Montgomery county, Quebec, 111.6 miles west of Washburn, thence into Bellechase county, and then to a connection with the Quebec Central at St. Sabine. This line is to form part of a new route from Quebec to St. John, N. B., in connection with the St. John Valley line being built by the St. John & Quebec from St. John, N. B., northwest to Grand Falls, 210 miles.

REID NEWFOUNDLAND COMPANY.—An officer writes that work is now under way between Grand Lake, Newfoundland, and Bonne Bay, on 45 miles, and between Black River and Terrenceville, on 40 miles. The work is being carried out by the company with its own forces.

ST. JOHN & QUEBEC.—See Quebec Extension.

SEWICKLEY & EDGEWORTH (Electric).—Incorporated in Pennsylvania with \$12,000 capital, and headquarters at Pittsburgh, Pa., to build a 2.5-mile line between Sewickley, Pa., and Edgeworth, in Allegheny county. W. Walker, of Leet township; H. Oliver, S. L. Tone, W. F. Floyd and W. B. Carson, Pittsburgh, are directors.

SHELBYVILLE, PETERSBURGH & DECATUR (Electric).—Incorporated in Tennessee with \$10,000 capital and headquarters at Shelbyville. The plans call for building from Shelbyville, Tenn., south to Decatur, Ala., about 70 miles. F. T. Kirkpatrick is an incorporator.

SOUTHERN PACIFIC.—This company has been given permission to issue \$1,696,102 of bonds by the Corporation Commission of Arizona, to carry out improvements on the following lines: Arizona Eastern from Phoenix, Ariz., west to the Hassayampa river, 39 miles, to cost \$678,029. The remainder of the funds will be used to improve the Phoenix & Eastern, between Phoenix and Winkleman, and the Globe branch, which extends from Bowie on the main line of the Southern Pacific, northwest to Globe.

TENNESSEE & KENTUCKY INTERURBAN.—This company was originally incorporated as the Tennessee & Kentucky Railroad, it is said, and has changed its name as above, and increased its capital stock from \$10,000 to \$15,000. The plans call for building from Nashville, Tenn., north via Goodlettsville, White House, Cross Plains, Orlinda and Lamont to Adairville, Ky., about 40 miles. An extension may be built northeast from Adairville via Franklin, Ky., to Glasgow, about 60 miles, and a branch in Tennessee west to Springfield, about 15 miles. The headquarters of the company are at Nashville.

TEXAS ROADS.—According to press reports, the W. R. Pickering Lumber Company of Haslam, Tex., which is opposite Logansport, La., has given a contract to J. N. George & Sons, to build from the company's mill to a point in Sabine county, about 40 miles. Grading has been finished on 18 miles and track has been laid on seven miles.

RAILWAY STRUCTURES

TRENTON, N. J.—Bids are being received by the Pennsylvania Railroad at Philadelphia, Pa., for a steel bridge to have six spans and to carry two tracks. The bridge is to be built over the Delaware river at Trenton, N. J.

Railway Financial News

BOSTON & MAINE.—The arrangements which had been made by which the Maine Central was to buy back from the Boston & Maine \$10,000,000 par value of its own stock now held by the B. & M. through the issue of 5 per cent. consolidated refunding mortgage bonds which were authorized in 1911, has been abandoned. The sale of these bonds to the public by the B. & M. had been underwritten by a syndicate of Boston bankers and the proceeds from the sale was to have been used by the Boston & Maine to pay the \$10,000,000 notes due February 1. This plan was abandoned because the bankers to whom the Maine Central bonds were to have been sold questioned the legality of the company's issuing bonds for this purpose.

CHICAGO & WESTERN INDIANA.—White, Weld & Company, New York, have bought from the company and are offering to the public \$4,066,000 consolidated mortgage 4 per cent. bonds of 1902-1952. The offering price is 83½, yielding about 4.98 per cent. on the investment.

GREENVILLE & KNOXVILLE.—The Georgia Trust Company, of Atlanta, Ga., has asked the court to order an immediate sale of the property under foreclosure of the mortgage on which it is claimed there is now due \$460,000.

MAINE CENTRAL.—See Boston & Maine.

NEW YORK CENTRAL & HUDSON RIVER.—H. S. Vanderbilt has been elected to the board of directors, succeeding J. P. Morgan, resigned.

NEW YORK, NEW HAVEN & HARTFORD.—The Supreme Court of Massachusetts' reversal of the Massachusetts Public Service Commission and the consequent inability of the New Haven to issue its \$67,000,000 convertible debenture bonds are mentioned elsewhere in these columns.

Mr. Elliott, in commenting on the decision, said: "I desire to say that the company has not been unmindful of the fact that the decision of the Supreme Court might be adverse and that it has been making preparations for taking care of its finances in such event. Steps will be taken promptly to perfect plans and to carry them into effect. As none of the short term notes mature before the middle of May, there is abundant opportunity for the company to make the necessary arrangements."

The *Wall Street Journal* says that distribution of the stock of the various subsidiary properties pro rata to New Haven stockholders will not be tolerated by the attorney general. The investment of New Haven in the following companies will be retained: The Central New England, the New York, Ontario & Western, the Millbrook Company and the New York, Westchester & Boston.

SOUTHERN PACIFIC.—The Corporation Commission of Arizona has approved of an issue of \$1,696,102 first mortgage 5 per cent. bonds by the Arizona Eastern, the proceeds of the sale of which are to be used for additions, betterments and extensions.

SOUTHERN RAILWAY.—It is reported that the voting trust under which Southern Railway stock is now deposited may in the near future be dissolved. The members of this trust are George F. Baker, Charles Lanier and Charles Steele.

UNION PACIFIC.—At a meeting on January 8 the board of directors approved the plan recommended by the executive committee and mentioned in these columns last week for a distribution of Baltimore & Ohio stock, a cash dividend of \$3, and a reduction of the annual rate from 10 per cent. to 8 per cent.

A suit has been filed by representatives of holders of 1,950 shares of preferred stock of the Union Pacific seeking an injunction against the distribution of Baltimore & Ohio stock to common stockholders without any corresponding distribution to preferred stockholders.